STAFF REPORT

THE FEASIBILITY OF A RIVER PORT GRAIN ELEVATOR AT SAVANNA, ILLINOIS

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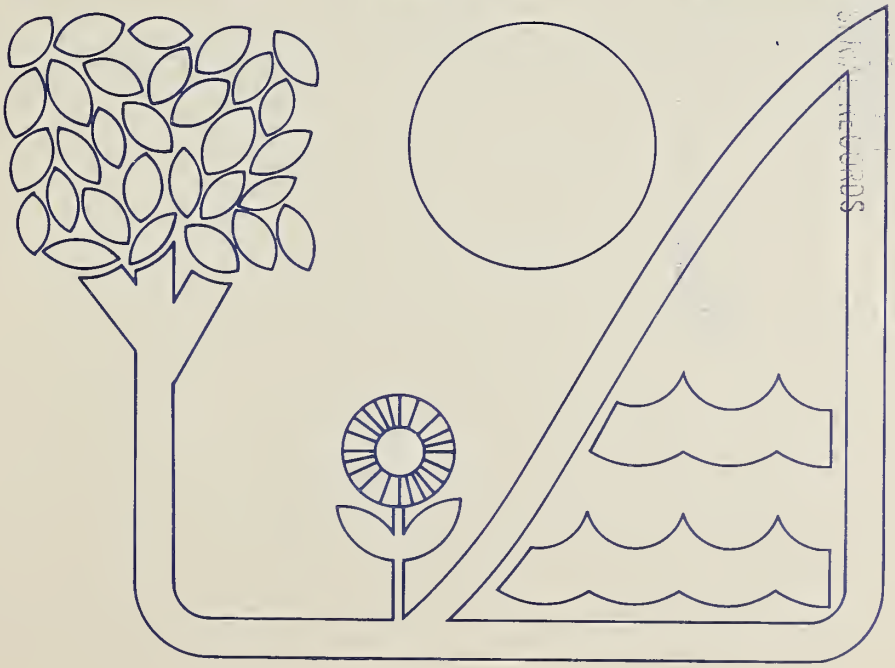
Economics, Statistics, and Cooperatives Service

United States Department of Agriculture



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ABSTRACT

This feasibility study of a proposed grain elevator focuses on an 11-county area covering parts of the Mississippi Valley located in northwest Illinois, northeast Iowa, and southwest Wisconsin. Projected estimates of production and exportable surpluses of corn, oats, and soybeans are used involving grain movements based on primary and secondary data from country elevators and trucker-dealers. Potential yearly grain flows to the proposed million-bushel river terminal are estimated at 9 to 14 million bushels for 1980, yielding variable investment returns. Estimated yields are 5, 10, and 16 percent when annual grain flows through the river terminal are 9, 11, and 14 million bushels, respectively.

Key words: River grain terminals, Feasibility analysis, Cost/return, Grain marketing patterns, Mississippi River grain movement, Illinois, Iowa, Wisconsin.

ACKNOWLEDGEMENTS

Many individuals in the Soil Conservation Service (SCS); Economics, Statistics, and Cooperatives Service (ESCS); University of Illinois; and the USDA State Statistical Offices of Illinois, Iowa, and Wisconsin contributed to the development of the initial questionnaire and provided secondary data.

The authors are indebted to the local RC&D personnel who aided in conducting the survey of country elevators as well as to the many country elevator operators and trucker grain dealers who cooperated in the survey. Special appreciation is extended to John Miner and Thomas H. Dempster, Resource Conservation and Development Branch, SCS for their help during the formulation, development and distribution of this report. Robert B. McKusick contributed greatly to the initial development and execution of the study. The authors also wish to thank Dwight Gadsby who aided in the editorial and review process of this study. Finally, special thanks is extended to Mrs. Barbara Simmons who processed the manuscript through several drafts.

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EXECUTIVE SUMMARY

THE FEASIBILITY OF A RIVER PORT GRAIN ELEVATOR AT SAVANNA, ILLINOIS

by

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Bruce L. Brooks 1/

The Blackhawk Hills Resource Conservation and Development Project proposed a feasibility study of a river port grain terminal at Savanna, Illinois as an RC&D activity. 2/ The goal of the project leadership was to increase returns to the natural resources of the Blackhawk Hills RC&D Project Area.

Data used in this study were obtained from a survey of country elevators and trucker grain dealers in the region. Other supporting data were obtained from sources such as university research findings and census information. Study data were integrated to answer the questions posed by the leaders of the Blackhawk Hills RC&D Project, i.e., (1) how much grain would flow through a river terminal at Savanna and, (2) would it be a sufficient quantity to make the terminal an economically feasible operation? Research results were:

- Grain production for the area is trending upward but at a lower rate than in the early and middle seventies.
- There is a sufficient volume of grain production and exportable surplus to support a river grain terminal marketing facility at Savanna, Illinois.

1/ Clifford D. Jones, Jr., Agricultural Economist, ESCS, U.S. Department of Agriculture. Bruce L. Brooks, Professor of Agricultural Economics, University of Illinois, Urbana-Champaign.

2/ This study was funded through transfer funds to the Economics, Statistics, and Cooperatives Service under a memorandum of understanding with the Soil Conservation Service.

- Based on savings in highway transport costs, researchers concluded that 9 to 14 million bushels of grain would move through the hypothetical terminal in 1980. It is conservatively estimated that the amount of grain that would move through the terminal over the next 15 years would average about 14 million bushels annually.
- It was concluded, based on assumptions regarding the terminal's construction and operation costs, the investment yield could range from 5 to 16 percent during the first year of operation, given three estimated levels of grain business and attendant assumptions.

Major conclusions derived from this study rested on a number of assumptions. A primary study assumption was that coarse grain consumption per animal unit in the study area will remain the same for all livestock classes. Another key assumption was that the international demand for grain would continue to grow. Corn would be the major grain for export with an estimated average increase in demand for transporation service (exportable surplus grain) of 2.4 percent per year for the period 1975-1995.

Study results based on highway transport costs alone, indicate that a grain terminal at Savanna might do the following volume of business over the next 15 years: 12 to 15 million bushels by 1985; 15 to 18 million bushels by 1990; and 17 to 20 million bushels by 1995.

Results of the cost/return analysis indicated that an investment in the proposed terminal at Savanna could yield a return ranging from 5 to 16 percent during the first year's operation. The 5 percent rate of return reflects conservative assumptions relative to the first year's business of the proposed terminal. Estimated returns could be increased, however, depending on the management of the terminal, country elevators and farmers' reaction toward the Savanna grain facility, and construction economy and site acquisition costs.

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INTRODUCTION

The production and marketing of grain is an important part of the total economic well-being of the producers and marketers of grain in this area in northwest Illinois. Efforts to increase the efficiency of the system now in use are justified for a number of reasons including: (1) the volume of grain that must find a market off the farms in the area, and (2) the need to continually strive for improved efficiency in the existing system.

This report was prepared by the Economics, Statistics, and Cooperatives Service (ESCS) for the Blackhawk Hills RC&D Council for use in evaluating the feasibility of a proposed grain elevator to be located on the Mississippi River at Savanna, Illinois. 2/

Directors of the Blackhawk Hills Project believe a grain port facility on the Mississippi River near Savanna, Illinois would improve the efficiency of grain marketing in their area. According to an earlier assessment of the Blackhawk Hills grain transportation problem, local farm leaders and grain dealers have been concerned for several years about adequancy of transportation

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1/ Clifford D. Jones, Jr., Agricultural Economist, ESCS, U.S. Department of Agriculture. Bruce L. Brooks, Professor of Agricultural Economics, University of Illinois, Urbana-Champaign.

2/ The Blackhawk Hills RC&D Project was organized as part of the Resource Conservation and Development (RC&D) Program Authorized by P.L. 87-703, Section 102 of the Food and Agriculture Act of 1962. One of the RC&D program's objectives is to encourage development in rural areas through improved use of natural resources. The program is operated by local people who receive assistance from authorized Federal agencies. The ESCS participates in the program under an agreement with the Soil Conservation Service (SCS) which is the lead agency in administering the program. The Blackhawk Hills RC&D area includes Jo Daviess, Stephenson, Carroll, Ogle, Whiteside, and Lee Counties in northwest Illinois. However, the grain port study area, identified in table 1, page 12, includes only 4 of these counties plus 7 other counties in Illinois, Iowa and Wisconsin.

to serve the area's expanding commercial grain trade. Formerly, the Blackhawk Hills area was a deficit feed grain area. Grain moved into rather than out of the area (13). 3/ However, in recent years, grain production has been increasing more rapidly than feeding requirements. Substantial amounts of grain are now available for shipment out of the area (tables 4, 5, and 6). It is estimated that about 60 percent of the feed grain produced in the area is fed to livestock and about 40 percent is exported. 4/ Much of the surplus grain is moved by truck to grain terminals on the Illinois and Mississippi Rivers where it is loaded onto barges and shipped to the Gulf for export to foreign markets.

During the period 1963-73, U.S. grain exports through Gulf ports increased almost 250 percent, exports of grain through Great Lakes ports showed only a modest increase, and exports through Atlantic ports declined (14). This suggests that the predominant expansion in U.S. grain export trade affecting midwest farmers will be through Gulf ports. The U.S. export market for feed grain and soybeans will likely play a major role in the success of a river terminal at Savanna, since barge activity in the midwest grain area is directly linked with Gulf ports and export trade.

In 1970, 14 midwestern grain marketing and farm supply cooperatives shipped two and one-half million tons of grain to the Gulf by barge. Louisiana Gulf ports were the major destination of these southbound barge shipments, accounting for 99.6 percent of the total. Louisiana ports also received 64 percent of the 14 cooperatives' grain shipments by rail (14). Between 1970 and 1974, midwest

3/ Underscored numerals in parenthesis refer to items in the Bibliography.

4/ Estimated percentages based on historic corn disposition statistics from publications of Illinois Cooperative Crop Reporting Service (8). In this report "grain for export" or "exportable surplus grain" is defined as grain produced in the 11-county study area in excess of local feed, seed, and processing requirements. "Exportable surplus" is the grain that moves out of the study area via truck, barge or rail to other destinations in Illinois, to other States, or into the world market.

barge shipments of corn and soybeans down the Mississippi and Illinois Rivers to the Baton Rouge-New Orleans, Louisiana area increased by 79 percent and 18 percent, respectively (6).

Based on these favorable trends for barge transportation and related businesses, it would appear that future prospects are bright for river grain handling firms in the midwest. However, the general increase in barge transportation of grain is no reliable basis for assuming that a new firm at Savanna could capture a share of this business.

Study Objectives

Key questions facing the investors/managers of a river grain terminal at Savanna are:

(1) How much grain will flow through the terminal?

(2) Will the terminal be a profitable operation?

Of course, answers to these questions depend to a large extent on the personal acumen and skills of the management of the terminal. This cannot be readily assessed and was not an objective of this study. Other factors which can be assessed, and which will affect the success of a grain terminal at Savanna form the study objectives: (1) how much grain is produced in the area, (2) how much is available for export from the area, (3) how much of the exportable surplus can be expected to move through a terminal at Savanna, and (4) what is the likely cost/revenue structure of a Savanna grain terminal?

Analytical Approach and Methodology

These objective factors were assessed and analyzed for an 11-county area around Savanna, Illinois covering parts of Illinois, Iowa, and Wisconsin. The counties are identified in table 1. The selected counties were designated as the potential service area of the proposed terminal in consideration of distance from Savanna and locations of other existing river grain terminals.

The analytical approach used in appraising the above factors was as follows:

(1) Estimate 1975, 1980, 1985, 1990, and 1995 production in the 11-county area for the major grains (corn, oats, and soybeans), using historical production trends for each crop.

(2) Estimate 1975, 1980, 1985, 1990, and 1196 local use of corn, oats, and soybeans, using local livestock and poultry feed requirements and local processing of any of the commodities as an indication of local use, i.e., grain used or consumed in the 11-county study area.

(3) Estimate 1975, 1980, 1985, 1990, and 1995 exportable surplus production of corn, oats, and soybeans in the 11-county area by deducing local use of each commodity from estimated local production.

(4) Estimate the amount of exportable surplus grain that would likely move through a river grain terminal at Savanna. Use current destinations of surplus grain, mode of transport, transport costs, and distance hauled as determining factors in the flow of grain.

A survey of country elevators and trucker-dealers was conducted to determine mode of transportation, transport costs, and to verify the marketing patterns of grain produced in the 11-county area. Additional barging costs resulting from loading grain at a Savanna port rather than alternative down river ports serving the designated study area were considered insignificant and dropped from explicit consideration.

(5) Estimate the cost/revenue structure of a hypothetical river grain terminal at Savanna. Assume three alternative model river grain elevators of specified capacities and develop cost data on each model. Develop a cost/return analysis on one model based on a conservative estimate of the volume of grain that a terminal at Savanna might expect to handle during the first year of operation.

Use survey data collected from country elevators and trucker dealers, grain terminal operating costs estimated in other studies, "rule of thumb" construction cost estimates cited by grain elevator operators and those who construct grain handling facilities and assumed margins as guideline information in developing the cost/return analysis.

Grain production was estimated for each county in the study area for the years 1965-75 and projected at 5-year intervals to 1980, 1985, 1990, and 1995 using secondary data. 5/ The data used in making these estimates came from several sources, including publications of State Universities, State Departments of Agriculture, the U.S. Department of Agriculture, and the U.S. Censuses of Agriculture (1, 3, 10, 18, 19, 22, 23). The projected estimates were developed using linear regression analysis of annual historical corn, oats, and soybean production data for each county. Adjustments were made in linear projections of individual counties that showed strong deviations from indicated trends in the study area using data from other studies (1, 3, 22).

Local livestock and poultry consumption of corn and oats was determined by estimating the annual feed use of each grain for 1975, 1980, 1985, 1990, and 1995 based on existing secondary data of annual livestock feed usage in study area counties (3), and where livestock usage was not available, by estimating current and future livestock and poultry numbers for each county and multiplying estimated numbers by annual feed ration rates for each class of livestock. Projections of livestock numbers were based on trend analysis of annual historical data in State and USDA publications (1, 3, 9, 10, 23). Annual feeding rates of each grain by class of livestock and poultry were obtained from other studies for Iowa and Illinois (1, 3).

5/ Grain production estimates include only corn and oats harvested for grain and soybeans for beans.

The amount of soybeans used on farms is normally insignificant. Therefore, only a small amount was estimated to be consumed locally, based on reported onfarm usage in Illinois and Iowa (1, 3, 8).

Exportable surplus grain is defined as the excess of local production over local use, or more precisely, the residual after subtracting estimated local feed, seed, and processing use from estimated production. The difference is assumed to be exported from the study area. Exportable surplus grain was estimated for each county in the study area for 1975, 1980, 1985, 1990, and 1995 by computing the difference between estimates of production and use in each county for the specified years.

It was assumed that the amount of exportable surplus grain that would likely move through a river grain terminal at Savanna would be related to the cost of transporting the grain from farms and country elevators to Savanna, as opposed to the cost of transporting it to other alternative grain terminals serving the study area.

According to two recent studies in Illinois, grain sold from Illinois farms moves primarily through four types of grain handling firms: (1) country elevators, (2) terminal and export elevators, (3) feed mills and manufacturers, and (4) grain processors. Most of the grain sold from farms in Illinois is first handled by country elevators, with minor quantities going directly to terminal elevators, local feed manufacturers, and processors. In 1970, 89 percent of the corn and 90 percent of the soybeans sold from Illinois farms moved through country elevators. This pattern had not changed appreciably in 1973, when it was estimated that country elevators received 92 percent of the corn and 94 percent of the soybeans sold by Illinois farmers. From the country elevator, grain moves to Illinois processors, terminal and export elevators, destinations in other States including feed and processing firms in the Southeast, and back to local farmers for feed (2, 7).

It was assumed that the relationship of the country elevator in the grain marketing chain in Illinois would hold for the study area, and that country elevators in the study area would be the most reliable source of prevailing grain flows, transportation mode, and hauling costs. Therefore, country elevators were surveyed to obtain the basic data used in estimating the amount of surplus grain and soybeans that could be economically delivered to a Savanna terminal. Mode of grain transport, costs of transporting grains and the volume of grain moving from farms and country elevators to the different terminals inside and outside the study area were obtained by the use of a mail, telephone, and personal interview survey of 76 country elevators and trucker-dealers located in the 11-county study area.

All of the 76 elevators and trucker-dealers were first contacted by mail. Those who did not respond were then visited personally or via telephone. Response to the questionnaire was received from 24 country elevators and 6 trucker-dealers in Illinois, 12 country elevators in Iowa, and 3 country elevators in Wisconsin. For the whole study area, this amounted to a 59.2 percent response rate.

Data from the survey of country elevators and trucker-dealers were used to determine the flow or destination of the exportable surplus grain and the mode and cost of transportation. Survey data on cost and distance hauled were used in regressing cents per bushel on miles hauled to each terminal for corn and soybeans. The resulting regression coefficients from this analysis were used to compute the transportation costs for hauling corn, soybeans, and oats to the terminals now used and to a proposed facility at Savanna by the country elevators and trucker-dealers surveyed. The most direct road mileages to each of the terminals now used by the elevators and trucker-dealers were taken from State highway maps. The mileage, from each

of these elevators and from the location of each trucker-dealer to Savanna, was obtained in the same manner. The difference in mileages to Savanna and to the terminal used were then computed. This figure was multiplied by the cost per bushel-mile regression coefficient to determine the difference in cost of transporting grain from any facility to any terminal used and the cost of transporting the same grain to a Savanna facility. If the distance was less to Savanna than to the terminal to which the grain was transported, then the cost of transporting the grain to Savanna was less. Given lower transport costs, it was then assumed the grain would flow to Savanna, other things being equal.

A formulation of the above computational steps used in deriving estimated grain transportation cost savings follows:

Transportation savings = $[(x-y)z]v$, where

x = Distance to alternative terminal

y = Distance to Savanna ($y < x$)

z = Cost per bushel-mile for transporting grain (which is .096 cents for corn and oats and .086 cents for soybeans, based on results of the country elevator and trucker-dealer survey)

v = Volume of grain transported to Savanna

The cost/return analysis of a river grain terminal at Savanna was developed using mostly secondary data from other studies (5, 6, 12, 14, 15, 16, 17), supplemented with data obtained from the country elevator survey, and personal interviews with grain elevator construction contractors and grain elevator operators. Annual operating-cost data were developed for three different sizes of river grain terminals which are capable of handling the amounts of grain that would likely be moving through a Savanna terminal (table 10). A cost/return analysis was developed for one alternative river

grain terminal model, assuming that a Savanna grain facility could attract between 7 and 9 million bushels of grain from the study area during the first year of operation. Cost data were developed for the same model operating at different volume levels to show how costs per bushel vary depending upon the amount of grain handled.

Other factors affecting the financial feasibility of a river grain terminal in the study area were examined including the export trade prospects for midwest grain farmers and grain handlers. Also, the effect of waterway user charges on barge traffic is briefly discussed and analyzed using information from a simulated case study for central Illinois (4).

General Assumptions

The following general assumptions are made in relation to this study:

1. General economic conditions now prevailing in the United States and the world will continue.
2. The export demand for U.S. grains and soybeans will continue at about the present level.
3. The cropping patterns of grain crops grown in the study area will remain essentially the same as they are at present.
4. The coarse grain consumption per animal unit in the study area will remain the same as it is at the present time for all livestock classes.
5. Trends in the total volume of each feed grain fed to livestock in the study area will continue to move in the same direction as in the past.
6. The present level of technology exhibited in grain handling, transportation, and storage in the study area will not markedly change in the foreseeable future.

7. The use of coarse grains and soybeans in the United States for food and industrial purposes will remain about the same as it is at the present time.

Limitations

In this study, transporation costs are the only costs considered in determining quantity of grain flow to the different river facilities. The researchers recognize that the kinds and quality of other services are often important in determining the facility to which grain will flow. In this study, these are ignored.

GRAIN PRODUCTION

The historic and projected production of each of the three major grains produced in the grain port study area is shown in tables 1, 2, and 3. Table 1 clearly shows an upward trend in corn production averaging about 4.5 percent per year over the 11-year period from 1965-75. Projected to 1995, corn production increases 87 percent over 1965. This is an average annual increase in corn production of about 2.8 percent over a 31-year period. When compared to the 4.5 percent average annual increase for the period 1965 through 1975, this estimated annual increase appears to be conservative, but perhaps more realistic than using the very large increases attained in a number of recent years.

Soybean production also shows a distinct upward trend (table 2). The production of soybeans in the study area rose an average of about 14.6 percent annually from 1965 to 1975. The projected production over the 31-year period from 1965 to 1995 also shows a marked increase, averaging about 12.0 percent annually for the 31 years. However, this rate of increase is not expected to continue at the same level between 1975 and 1995. During the 20-year period the average annual rate of increase in soybean production is estimated to drop to 4 percent.

Oat production shows a historic downward trend over the 11-year period, 1965-75, with an average annual decline in production of about 3.5 percent (table 3). Projected production of oats to 1995 shows a reduction in the rate of the downward trend with an average annual decline of about 1.8 percent for the 31-year period. Oat production is projected to decline at a rate of about 1.3 percent per year between 1975 and 1995.

No production data was developed for wheat. Although some wheat is grown in the area, it is considered an insignificant grain crop relative to its importance to a river grain terminal at Savanna. The grain marketing

Table 1--Corn production, historic and projected, grain port study area, by counties, 1965-75 and 1980, 1985, 1990, and 1995

State and county	Historic							
	1965	1966	1967	1968	1969	1970	1971	1972
	Bushels							
Illinois								
Carroll	7,468,300	8,482,200	10,837,200	10,089,300	11,073,200	9,220,000	11,871,800	10,963,200
Jo Daviess	4,681,500	5,277,900	6,238,600	7,012,600	5,885,400	5,905,600	7,055,100	6,967,200
Ogle	15,598,900	15,935,900	20,692,700	19,142,600	20,592,000	16,830,300	19,957,900	20,326,700
Stephenson	8,608,400	9,844,900	11,921,200	12,256,200	11,158,100	12,208,300	14,879,800	13,880,900
Winnebago	6,760,700	7,556,600	9,587,400	8,157,100	8,576,700	8,364,400	9,785,900	8,627,200
Subtotal	43,117,800	47,097,500	59,277,100	56,657,800	57,285,400	52,528,600	63,550,500	60,765,200
Iowa								
Clinton	14,589,000	13,985,000	18,415,000	15,530,000	16,800,000	13,423,000	18,871,000	17,447,000
Dubuque	6,726,000	7,189,000	8,596,000	8,982,000	7,990,000	9,082,000	10,236,000	10,167,000
Jackson	6,947,000	6,907,000	8,256,000	7,935,000	7,857,000	7,284,000	9,361,000	9,258,000
Subtotal	28,262,000	28,081,000	35,267,000	32,447,000	32,647,000	29,789,000	38,468,000	36,872,000
Wisconsin								
Grant	7,627,700	8,456,400	8,088,600	11,315,000	10,642,800	10,386,800	12,688,200	12,211,500
Green	5,159,100	5,298,300	6,260,400	6,965,700	5,594,100	5,830,800	7,383,100	6,830,000
LaFayette	6,660,000	7,231,200	7,003,500	8,802,000	6,514,800	6,811,200	8,807,200	8,413,300
Subtotal	19,446,800	20,985,900	21,352,500	27,082,700	22,751,700	23,028,800	28,878,500	27,454,800
Total area	90,826,600	96,164,400	115,896,600	116,187,700	112,684,100	105,346,400	130,897,000	125,092,000

See footnote at end of table.

Continued

Table 1 --Corn production, historic and projected, grain port study area, by counties, 1965-75 and 1980, 1985, 1990, and 1995--Continued

State and county	Historic			Projected			
	1973	1974	1975	1980	1985	1990	1995
			Bushels				
Illinois							
Carroll	10,103,100	9,007,600	13,460,200	13,580,000	13,650,000	13,800,000	14,458,000
Jo Daviess	6,609,200	4,518,500	7,033,700	7,100,000	7,596,000	8,100,000	8,588,000
Ogle	17,426,600	12,973,100	22,061,600	22,560,000	23,275,000	24,990,000	26,705,000
Stephenson	13,159,900	9,437,700	16,679,900	16,700,000	16,750,000	16,800,000	17,315,000
Winnebago	8,161,200	6,088,400	10,830,300	10,850,000	10,900,000	11,293,000	12,068,000
Subtotal	55,460,000	42,025,300	70,065,700	70,790,000	72,171,000	74,983,000	79,134,000
Iowa							
Clinton	16,237,000	13,035,000	19,801,000	23,000,000	24,800,000	26,700,000	28,600,000
Dubuque	10,390,000	8,762,000	10,049,000	11,900,000	13,400,000	14,700,000	16,400,000
Jackson	8,545,000	6,246,000	8,766,000	11,100,000	12,200,000	13,300,000	14,400,000
Subtotal	35,172,000	28,043,000	38,616,000	46,000,000	50,400,000	54,700,000	59,400,000
Wisconsin							
Grant	11,746,000	10,470,000	11,696,000	11,780,000	12,280,000	12,830,000	13,643,000
Green	6,016,400	3,955,000	6,534,000	6,545,000	6,927,000	7,330,000	7,692,000
LaFayette	7,814,200	6,920,000	9,409,000	9,410,000	9,670,000	9,800,000	9,980,000
Subtotal	25,576,600	21,345,000	27,639,000	27,735,000	28,877,000	29,960,000	31,315,000
Total area	116,208,600	91,413,300	136,320,700	144,525,000	151,448,000	159,643,000	169,549,000

Source: Historical estimates came from a series of State Agricultural Statistical publications for Illinois, Iowa, and Wisconsin (9, 10, 23). Projected estimates were developed using linear regression analysis of annual historical production data for each county. Some linear projections were adjusted based on indicated trends in other studies for study area counties and for areas which contained study area counties (1, 3, 22).

Table 2--Soybean production, historic and projected, grain port study area, by counties, 1965-75 and 1980, 1985, 1990, and 1995

State and county	Historic							
	1965	1966	1967	1968	1969	1970	1971	1972
	Bushels							
Illinois								
Carroll	145,100	139,400	129,900	270,800	204,300	310,400	340,100	384,700
Jo Daviess	54,500	56,300	55,200	96,500	85,100	105,800	94,500	116,200
Ogle	839,900	893,900	1,117,200	1,150,300	1,406,700	1,659,400	1,650,700	2,141,200
Stephenson	114,800	159,600	154,100	236,800	312,200	380,400	369,800	446,000
Winnebago	507,800	517,900	612,100	695,800	635,600	671,200	707,100	838,000
Subtotal	1,662,100	1,767,100	2,068,500	2,450,200	2,643,900	3,127,200	3,162,200	3,926,100
Iowa								
Clinton	847,000	793,000	1,093,000	1,332,000	1,383,000	1,509,000	1,531,000	1,804,000
Dubuque	28,000	38,000	34,000	53,000	55,000	76,000	62,000	59,000
Jackson	152,000	131,000	141,000	153,000	198,000	189,000	198,000	251,000
Subtotal	1,027,000	962,000	1,268,000	1,538,000	1,636,000	1,774,000	1,791,000	2,114,000
Wisconsin								
Grant	16,800	20,700	20,900	18,400	20,700	22,500	16,800	20,250
Green	31,900	36,000	47,500	57,200	64,050	76,700	55,350	69,600
LaFayette	7,350	7,700	8,400	11,250	27,600	24,300	21,000	43,400
	56,050	64,400	76,800	86,850	112,350	123,500	93,150	133,250
Total area	2,745,150	2,793,500	3,413,300	4,075,050	4,392,250	5,024,700	5,046,350	6,173,350

See footnote at end of table.

Continued

Table 2 --Soybean production, historic and projected, grain port study area by counties, 1965-75 and 1980, 1985, 1990, and 1995--Continued

State and county	Historic			Projected			
	1973	1974	1975	1980	1985	1990	1995
				Bushels			
Illinois							
Carroll	595,000	307,800	399,400	412,000	480,000	566,000	642,000
Jo Daviess	261,000	178,500	225,900	230,000	245,000	260,000	297,000
Ogle	3,293,000	1,534,700	2,368,400	2,500,000	2,700,000	3,182,000	3,622,000
Stephenson	908,000	447,100	741,300	745,000	765,000	785,000	805,000
Winnebago	1,126,000	537,900	855,300	896,000	985,000	1,081,000	1,224,000
Subtotal	6,183,000	3,008,000	4,590,300	4,683,000	5,175,000	5,874,000	6,590,000
Iowa							
Clinton	2,313,000	1,597,000	2,011,000	2,722,000	3,347,000	3,972,000	4,597,000
Dubuque	133,000	87,000	90,000	132,000	167,000	212,000	249,000
Jackson	346,000	173,000	218,000	475,000	600,000	725,000	855,000
Subtotal	2,792,000	1,857,000	2,319,000	3,329,000	4,114,000	4,909,000	5,701,000
Wisconsin							
Grant	57,000	43,000	55,000	64,000	81,000	104,000	122,000
Green	110,400	74,000	82,000	119,000	155,000	201,000	235,000
LaFayette	138,000	98,000	101,000	161,000	218,000	276,000	335,000
Subtotal	305,400	215,000	238,000	344,000	454,000	581,000	692,000
Total area	9,280,400	5,078,000	7,147,300	8,356,000	9,743,000	11,364,000	12,983,000

Source: Historical estimates came from a series of State Agricultural Statistical publications for Illinois, Iowa, and Wisconsin (9, 10, 23). Projected estimates were developed using linear regression analysis of annual historical production data for each county. Some linear projections were adjusted based on indicated trends in other studies for study area counties and for areas which contained study area counties (1, 3, 22,).

Table 3 --Oat production, historic and projected, grain port study area by counties, 1965-75 and 1980, 1985, 1990, and 1995--Continued

State and county	Historic							
	1965	1966	1967	1968	1969	1970	1971	1972
	Bushels							
Illinois								
Carroll	1,594,100	1,479,200	1,244,400	1,580,500	1,191,200	2,077,500	1,100,500	881,100
Jo Daviess	1,545,100	1,413,300	1,455,900	1,398,300	1,298,400	1,165,300	1,233,900	836,200
Ogle	2,422,100	2,565,200	2,228,900	2,504,800	2,027,600	1,876,200	1,573,600	1,259,900
Stephenson	2,433,800	2,621,700	2,063,500	2,427,700	2,170,700	1,818,200	1,827,700	1,140,200
Winnebago	1,111,100	1,220,100	1,108,400	1,286,400	1,024,000	964,000	874,400	734,100
Subtotal	9,106,200	9,299,500	8,101,100	9,197,700	7,711,900	7,901,200	6,610,100	4,851,500
Iowa								
Clinton	2,208,000	2,105,000	2,009,000	2,038,000	1,825,000	1,698,000	1,476,000	1,058,000
Dubuque	2,377,000	2,110,000	2,160,000	2,394,000	1,912,000	2,241,000	2,035,000	1,725,000
Jackson	1,596,000	1,687,000	1,572,000	1,689,000	1,431,000	1,370,000	1,429,000	1,152,000
Subtotal	6,181,000	5,902,000	5,741,000	6,121,000	5,168,000	5,309,000	4,940,000	3,935,000
Wisconsin								
Grant	3,889,600	3,707,600	3,321,600	3,577,200	3,073,900	3,535,000	3,346,000	2,451,000
Green	2,378,500	2,358,400	2,196,400	2,220,000	1,810,400	2,037,000	1,849,200	1,070,400
LaFayette	2,597,600	2,546,000	2,092,200	2,343,000	1,897,100	1,964,200	1,811,200	1,296,000
Subtotal	8,865,700	8,612,000	7,610,200	8,140,200	6,781,400	7,536,200	7,006,400	4,817,400
Total area	24,152,900	23,813,500	21,452,300	23,458,900	19,661,300	20,746,400	18,556,500	13,603,900

See footnote at end of table.

Continued

Table 3 --Oat production, historic and projected, grain port study area, by counties, 1965-75 and 1980, 1985, 1990, and 1995--Continued

State and county	Historic			Projected			
	1973	1974	1975	1980	1985	1990	1995
			Bushels				
Illinois							
Carroll	610,100	1,264,600	1,298,100	1,172,000	1,068,500	918,900	826,800
Jo Daviess	684,500	900,300	893,900	875,000	842,000	782,300	727,500
Ogle	1,103,800	1,282,700	1,413,500	1,350,000	1,116,000	975,300	882,000
Stephenson	1,025,600	1,280,700	1,177,700	1,133,000	1,082,000	958,300	807,600
Winnebago	609,400	718,400	665,200	617,300	522,200	519,600	467,300
Subtotal	4,033,400	5,446,700	5,448,400	5,147,300	4,630,700	4,154,400	3,711,200
Iowa							
Clinton	1,020,000	1,287,000	1,239,000	1,235,000	1,220,000	1,191,000	1,072,000
Dubuque	1,779,000	2,153,000	1,867,000	1,860,000	1,800,000	1,760,000	1,662,000
Jackson	1,024,000	1,217,000	1,181,000	1,175,000	1,155,000	1,130,000	1,107,000
Subtotal	3,823,000	4,657,000	4,287,000	4,270,000	4,175,000	4,081,000	3,841,000
Wisconsin							
Grant	2,473,500	2,963,000	2,456,000	2,144,000	1,954,400	1,681,600	1,413,000
Green	1,060,000	1,262,000	1,353,000	1,300,000	1,270,000	1,092,600	984,000
LaFayette	1,307,900	1,834,000	1,383,000	1,350,000	1,300,000	1,174,800	1,058,000
Subtotal	4,841,000	6,059,000	5,192,000	4,794,000	4,524,400	3,949,000	3,455,000
Total area	12,697,800	16,162,700	14,927,400	14,211,300	13,330,100	12,184,400	11,007,200

Source: Historical estimates came from a series of State Agricultural Statistical publications for Illinois, Iowa, and Wisconsin (9, 10, 23). Projected estimates were developed using linear regression analysis of annual historical production data for each county. Some linear projections were adjusted based on indicated trends in other studies for study area counties and for areas which contained study area counties (1, 3, 22).

district in northern Illinois, which includes the Illinois portion of the grain port study area, is a deficit wheat area—more wheat is fed to livestock than produced (3).

The total estimated volume of grain produced in the 11-county area in 1975 was 136,320,700 bushels of corn; 7,147,300 bushels of soybeans; and 14,927,400 bushels of oats, which is a total production of all three grains of 158,395,400 bushels. When the total production of these three grains is projected to 1995, the total is 193,539,200 bushels, an increase of 22 percent over 1975 production of these three grains in the 11-county area.

These county production data show that there is now, and is projected to be, a sizeable volume of grain to be used in local feeding and processing or marketed from the area. About 47 to 51 percent of the grain now comes, and is projected to come, from five Illinois counties, about 27-35 percent from three Iowa counties, and about 14-24 percent from three Wisconsin counties. About 86 percent of the grain that is now produced in the 11-county area is produced in Illinois and Iowa. Projected estimates of grain production are believed to be somewhat conservative. Actual production in future years could average 7 to 10 percent higher than projected levels if recent increases in production are maintained.

Much of the grain that is produced never moves beyond the local area where it is grown. It is either fed on the farm where it is produced, moved short distances to other farms where it is fed to livestock, or moved to small feed mills and then returned to the farm. Some of the grain moves to country elevators and is returned direct to the area farms or to local feed mills and then back to the farms. Grain treated in this manner is not considered to be commerical grain in this study. Only the grain that moves to country elevators or terminals for further transshipment by truck, barge, or

rail is of concern in this study. This grain, defined as exportable surplus grain, is that amount of local production in excess of local requirements for feed and seed.

EXPORTABLE SURPLUS GRAIN

The exportable surplus of corn, oats, and soybeans in the 11-county study area is estimated for 1975 and projected at 5-year intervals from 1980 to 1995, by counties and by States (tables 4, 5, and 6).

The estimated exportable surplus of corn, oats, and soybeans combined from Illinois counties alone was slightly over 44 million bushels in 1975. This surplus production consisted of about 37 million bushels of corn; 2.5 million bushels of oats, and 4.5 million bushels of soybeans. The exportable surplus estimates of corn, oats, and soybeans in the Iowa portion of the study area in 1975 were 14.2 million bushels of corn, slightly over 1.0 million bushels of oats, and about 2.3 million bushels of soybeans. Exportable surplus estimates for the Wisconsin portion of the study area in 1975 was just over 7.0 million bushels of corn, about 0.5 million bushels of oats, and about 0.2 million bushels of soybean.

A continual upward trend in exportable surplus of corn is estimated for the study area and each county within it. For the total area, corn surplus is projected to increase about 49 percent between 1975 and 1995. This is an average annual increment of about 2.4 percent over the 20-year period (table 4). The exportable surplus of soybeans in the study area is projected to rise during each 5-year period from 1975 to 1995. The projected annual increase in exportable surplus averages about 4.0 percent, or 286,000 bushels per year (table 5). Projected exportable surplus of oats shows a decline of about 19.3 percent between 1975 and 1995. The decline averages almost 1.0 percent a year starting from 1975, or about 39,500 bushels annually (table 6).

The total amount of exportable surplus grain in the study area available to move into commercial channels by country elevators and terminals is projected to increase at the rate of 2.4 percent per year between 1975 and 1995. The increases in exportable surpluses of corn and soybeans are somewhat

Table 4—Corn: Exportable surplus estimates, grain port study area, by counties, 1975, 1980, 1985, 1990, and 1995 1/

State and county	1975	1980	1985	1990	1995
	Thousand bushels				
Illinois					
Carroll	6,178	6,300	6,746	7,834	8,921
Jo Daviess	1,196	1,218	1,715	2,220	2,709
Ogle	14,737	15,003	17,069	19,008	20,990
Stephenson	7,856	7,980	8,213	9,623	11,129
Winnebago	7,072	7,200	7,718	8,614	9,550
Subtotal	37,039	37,701	41,461	47,299	53,299
Iowa					
Clinton	9,623	11,185	12,396	13,071	14,381
Dubuque	2,040	2,417	3,760	4,623	6,011
Jackson	2,526	3,198	4,009	4,204	4,790
Subtotal	14,189	16,800	20,165	21,898	25,182
Wisconsin					
Grant	2,807	2,865	3,070	3,208	3,411
Green	1,960	1,964	2,078	2,199	2,308
Lafayette	2,258	2,260	2,300	2,344	2,495
Subtotal	7,025	7,089	7,448	7,751	8,214
Total area	58,253	61,590	69,074	76,948	86,695

1/ Exportable surplus is the estimated amount of grain available for export out of area, production less local consumption.

Table 5--Soybeans: Exportable surplus estimates, grain port study area, by counties, 1975, 1980, 1985, 1990, and 1995 1/

State and county	1975	1980	1985	1990	1995
			Thousand bushels		
Illinois					
Carroll	389	402	468	552	626
Jo Daviess	220	225	240	254	290
Ogle	2,309	2,400	2,632	3,102	3,531
Stephenson	723	740	775	800	850
Winnebago	834	874	960	1,054	1,193
Subtotal	4,475	4,641	5,075	5,762	6,490
Iowa					
Clinton	1,963	2,657	3,268	3,890	4,468
Dubuque	88	128	163	207	241
Jackson	213	461	583	705	828
Subtotal	2,264	3,246	4,014	4,802	5,537
Wisconsin					
Grant	53	61	78	100	117
Green	79	114	149	193	226
Lafayette	97	155	209	265	322
Subtotal	229	330	436	558	665
Total area	6,968	8,217	9,525	11,122	12,692

1/ Exportable surplus is the estimated amount of soybeans available for export out of area, production less local consumption.

Table 6 -- Oats: Exportable surplus estimates, grain port study area, by counties, 1975, 1980, 1985, 1990, and 1995 1/

State and county	1975	1980	1985	1990	1995
			Thousand bushels		
Illinois					
Carroll	804	726	669	551	489
Jo Daviess	288	291	293	276	263
Ogle	859	820	642	538	481
Stephenson	236	226	220	211	121
Winnebago	319	296	254	236	224
Subtotal	2,506	2,359	2,078	1,812	1,578
Iowa					
Clinton	412	485	495	505	515
Dubuque	291	320	340	360	380
Jackson	333	385	410	435	460
Subtotal	1,036	1,190	1,245	1,300	1,355
Wisconsin					
Grant	246	214	195	168	141
Green	162	160	152	131	118
Lafayette	138	138	137	117	106
Subtotal	546	512	484	416	365
Total area	4,088	4,061	3,807	3,528	3,298

1/ Exportable surplus is the estimated amount of grain available for export out of area, production less local consumption.

offset by the decline in oats. In total, grain available for export from the 11-county area is expected to increase from about 69 million bushels in 1975 to about 103 million bushels in 1995.

ESTIMATED VOLUME OF GRAIN THAT WOULD MOVE TO A SAVANNA TERMINAL

The main problem in this study was to determine if there is now and will be in the future a sufficient volume of exportable surplus grain in the grain port service area that can be economically delivered to a river terminal at Savanna, Illinois to warrant investment in grain facilities at Savanna. The basis for determination of whether the grain can be delivered is based on whether the per bushel-mile cost of delivery to Savanna is lower than it is to the terminal or terminals to which the grain was moved during the 1975-76 crop year. Explicit consideration was given only to trucking costs.

Total and Commercial Grain Flows in Study Area

Current grain flows, mode of transport, and transportation costs of moving grain from farms and country elevators in the study area to other destinations were obtained from data acquired in a sample survey of 76 country elevators and trucker-dealers operating in the study area. Response from 45 country elevators and trucker-dealers showed that, of the 28.5 million bushels of grain handled, they moved about 24.6 million bushels of corn, oats, and soybeans into commercial channels during the 1975-76 marketing year (table 7). About 86 percent of the total volume handled went into commerical outlets and left the area, and approximately 14 percent was retained in the area for feed and other local uses.

The total volume of commercial sales by the respondent elevator and trucker grain dealers accounted for about 35.5 percent of the total estimated surplus surplus of corn, oats, and soybeans in 1975. The remaining exportable surplus was handled by elevators and trucker-dealers who were not included in the survey or who did not respond to the survey and by farmers who hauled their grain direct to river terminals and other outlets, by-passing country elevators. Survey response indicated that the farther removed country elevators surveyed were from Savanna, the less inclined they were to respond to

Table 7 --Volume and percentage of corn, soybeans, and oats marketed by 45 country elevators and trucker-dealers that remain in local area and move into commercial channels, grain port study area, by States, 1975-76 1/

Area / Commodity	Total volume handled	Local use	Commercial sales	Local use	Commercial sales
		1,000 bushels		Percent	
Illinois					
Corn	19,997.1	2,051.0	17,946.1	10.3	89.7
Soybeans	1,920.1	0	1,920.1	0	100.0
Oats	633.15	234.5	398.65	37.1	62.9
Subtotal	22,550.35	2,285.5	20,264.85	10.1	89.9
Iowa					
Corn	4,094.7	1,491.7	2,603.0	36.4	63.6
Soybeans	918.6	0	918.6	0	100.0
Oats	294.45	111.8	182.65	38.0	62.0
Subtotal	5,307.75	1,603.5	3,704.25	30.2	69.8
Wisconsin					
Corn	586.0	0	586.0	0	100.0
Soybeans	10.0	0	10.0	0	100.0
Oats	10.5	3.0	7.5	28.6	71.4
Subtotal	606.5	3.0	603.5	.5	99.5
Total, grain port study area	28,464.6	3,892.0	24,572.6	13.7	86.3

1/ Marketing year for each grain is the one used by ESCS, USDA.

the survey questionnaire. Therefore, it can be reasonably assumed that because of distance these elevators would not likely use a Savanna facility, other things being equal. Consequently, the the amount of grain for which a river facility at Savanna might compete is probably in the neighborhood of that amount indicated going into commercial channels based on the survey response, or roughly 24.6 million bushels of all three commodities combined.

Most of the commercial grain sales were to river terminals on the Mississippi and Illinois Rivers. Very few oats went to river terminals. The predominant mode of transportation to river terminals was by trucks hauling 500 bushels or more. The trucking costs from country elevators and farms to river terminals were estimated at 0.096 cents per bushel-mile for corn and oats and 0.086 cents per bushel-mile for soybeans.

Optimistic Estimates of Grain Flows Through a Savanna Terminal

Based on transportation costs and the marketing patterns of the study area surplus grain handled by the respondent elevator and trucker-dealers, an estimated 20.5 million bushels of grain would have moved through a facility at Savanna in 1975, and 22.2 million by 1980 (tables 8 and 9).

The estimated savings in transportation costs to country grain shippers (country elevator and trucker-dealers responding to the grain flow/transportation cost survey) by moving their grain to a Savanna facility rather than to the destination used in 1975-76 was estimated at about $594,000 (table 8). Because most of the grain originated in Illinois, the greatest benefit due to lower transportation costs would accrue to Illinois grain dealers and farmers. It is estimated they could have realized about $559,000 in highway transportation cost reductions in 1975-76 by shipping grain through a Savanna terminal.

Table 8 --Volume of corn, soybeans, and oats moving to Savanna and savings to shippers, due to lower transport costs, grain port study area, by counties and States, 1975-76 1/

State and county	Corn		Soybeans		Oats	
	Volume moving to Savanna	Savings to shippers	Volume moving to Savanna	Savings to shippers	Volume moving to Savanna	Savings to shippers
	1,000 bu.	Dollars	1,000 bu.	Dollars	1,000 bu.	Dollars
Illinois						
Carroll	3,915.8	97,650	252.0	5,934	134.0	9,320
Jo Daviess	2,797.5	97,637	77.5	2,194	30.0	1,717
Ogle	5,801.4	179,452	854.5	26,771	173.9	14,309
Stephenson	2,529.4	65,287	155.0	4,139	20.0	596
Winnebago	1,818.0	46,379	260.5	6,310	34.3	1,348
Subtotal	16,861.1	486,405	1,599.5	45,348	391.9	27,290
Iowa						
Clinton	288.0	2,765	437.2	6,901	52.9	440
Dubuque	85.5	271	--	--	12.0	208
Jackson	120.0	1,456	18.0	233	42.0	1,086
Subtotal	493.5	4,492	455.2	7,134	106.9	1,736
Wisconsin						
Grant	--	--	--	--	--	--
Green	586.0	20,952	10.0	399	7.5	250
Lafayette	--	--	--	--	--	--
Subtotal	586.0	20,952	10.0	399	7.5	250
Total area	17,940.6	511,849	2,064.7	52,881	506.3	29.276

1/ Volume of each grain that could be moved to Savanna at a lower cost than was incurred by shipment to other terminals in 1975-76.

Table 9--Volume of corn, soybeans, and oats estimated to move to a Savanna terminal, rather than to existing alternate terminals, due to lower transport costs, using three different analyses and sets of assumptions grain port study area, 1975, 1980, 1985, 1990, and 1995 1/

Grain	Estimated volume moving to Savanna				
	1975	1980	1985	1990	1995
	Thousand bushels				
Estimate No. 1 2/					
Corn	17,941	19,093	21,413	23,854	26,875
Soybeans	2,065	2,629	3,047	3,558	4,060
Oats	506	509	477	442	413
Total	20,512	22,231	24,937	27,854	31,348
Estimate No. 2 3/					
Corn	12,100	12,300	13,600	15,900	18,200
Soybeans	1,250	1,300	1,400	1,600	1,800
Oats	390	365	330	290	260
Total	13,740	13,965	15,330	17,790	20,260
Estimate No. 3 4/					
Corn	10,260	10,430	11,575	13,530	15,425
Soybeans	797	829	892	1,017	1,144
Oats	--	--	--	--	--
Total	11,057	11,259	12,467	14,547	16,569

1/ Based on trucking costs alone, other factors influencing grain flow to terminals assumed to be equal. Estimates for projected years 1980-1995 are based on assumed continued relationship between exportable surplus grain available for shipment and that portion moving to Savanna in 1975-76 as established via the country elevator survey. 1975 estimates are from table 8.

2/ Estimates are based on analysis of survey results, moving grain to nearest terminal or via the least transportation cost route. They are considered to be maximum levels because they include movement of grain via Savanna regardless of the magnitude of savings in transportation costs--in many instances grain was routed through Savanna when savings were only marginal.

3/ Estimate No. 2 is a more realistic estimate than No. 1 and reflects downward adjustments in the first level maximum estimates to account for that grain which was estimated to move to Savanna when savings in transportation costs were marginal. Includes only grain produced in Illinois counties of the study area.

4/ Estimate No. 3 is the most conservative of all three estimates. It is based on an analysis that included only that volume of grain handled by Illinois country elevators and trucker-dealers who answered "yes" to the survey question: "Would you use a river elevator in Savanna?" All "yes" responses were within 50 miles of Savanna and showed grain going to Savanna due to lower trucking costs (savings of 2 cents or more per bushel). This analysis also excluded corn, oats, and soybeans that moved to destinations other than river terminals, such as Illinois and Iowa processing plants.

Conservative Estimates of Grain Flows Through a Savanna Terminal

All of the elevators surveyed were asked if they would ship to a river terminal elevator at Savanna if one were built. The amount of grain reported shipped to river terminals by the Illinois respondents answering "yes" to this question was about 10.3 million bushels of corn, about 0.8 million bushels of soybeans and and no significant quantity of oats (Column 1, estimate No. 3, table 9). Several of the respondents expressed concern about poor road conditions and the detrimental effect that these could have on their equipment. Three of the 24 Illinois respondents said "no" because of the inadequancy of roads, weight limits on bridges, additional time and the equipment required. Not all respondents answered this question. The same was true in Iowa and Wisconsin. There was a higher negative response in Iowa where five out of twelve said they would not be interested in shipping to a facility at Savanna. The same reasons were given plus the necessity for paying a toll to cross the river to a terminal at Savanna. It should be noted that several of the "no" answers were qualified by such statements as, "If turnaround time is reduced, we would consider it," and, "If the elevator charges are attractive, we would be interested," and so forth.

Only one Wisconsin elevator responded to this question, and it was a "no" response. This respondent felt that the roads to Savanna were inadequate and traffic on them too slow, resulting in an increase in time to deliver and return. Several respondents also felt that weight limits on secondary route bridges and roads which they could use to reduce the turnaround time, were other limitations. Several elevator operators stated they would not be interested in a facility at Savanna. However, because of their qualifications and conditional answers, their marketings were included in the analysis of grain movement and transportation costs for the study area. Analysis of

survey results indicated that about 30 percent of all grain available for export in the study area would move through a Savanna terminal due to lower highway transport costs.

However, in consideration of the non-committal, negative and qualifying response to the question regarding use of a Savanna river terminal, and since a good portion of the grain estimated to move to Savanna due to lower trucking costs was based on marginal savings, survey data were re-examined and a conservative estimate of grain likely to be available for a Savanna facility was developed (table 9). This analysis indicated that a more realistic estimate of grain moving to Savanna due to lower transportation costs would be in the neighborhood of 11 to 14 million bushels of grain by 1980, rather than the 22 million bushels previously estimated based on unqualified savings in trucking costs. The 22 million bushel estimate was developed in strict adherence to transportation savings as the guiding principle in directing grain flow, regardless of how small the savings might be. In addition to ignoring changes in grain flow due to marginal truck transport savings, the more conservative estimates take into account that some grain now moving to nonriver terminal destinations, especially oats, would not likely be diverted to Savanna.

Table 9 shows three estimated levels of grain movement to a Savanna terminal based on savings in trucking costs and three different analyses and sets of assumptions relative to marginal savings and flow of grain to nonriver destinations. Volumes of corn, soybeans, and oats expected to move to Savanna based on results of the 1975-76 marketing-year grain movement survey are shown for 1975 and projected to 1980, 1985, 1990 and 1995. Tables 1, 2, and 3 in Appendix A show the grain flow and transportation cost analysis in more detail.

FINANCIAL FEASIBILITY

The financial feasibility of a river grain factility at Savanna, Illinois was evaluated using secondary data and assumptions regarding the facility's function. First hand information on size of facility, services to be performed, cost of plant, equipment, site preparation, land, financing, and expected charges for services rendered are needed before a realistic financial feasibility analysis can be made. However, one of the key variables in the analysis has been appraised--the demand for the facility in terms of exportable surplus grain in the proposed facility's service area. Exportable surplus grain is expected to increase over the next 15 years (tables 4, 5, and 6). Based on the grain flow and transportation cost analysis of moving grain from country elevators to river terminals, it appears that a facility at Savanna could favorably compete for a sizeable share of the area's exportable surplus grain in view of estimated savings in transportation costs to farmers and country elevator operators (tables 8 and 9). This conclusion is based solely on the transportation costs of moving grain from production sites in the port facility service area to existing river terminals and to a proposed river terminal at Savanna. It does not account for competitive response, such as existing firms' pricing policies and services offered, nor does it include assessments of barge availability, possible added cost of barging and quality of management of the new facility.

Since costs of operation will influence the price a Savanna river terminal can successfully bid for grain, a realistic appraisal of investment and operating costs must be made before financial feasibility can be assessed. To illustrate one approach in making the appraisal, a cost/return analysis was prepared for the proposed river port facility using three hypothetical models of river terminals and assumed costs and returns (tables 10, 11, 12, 13, 14 and 15). Estimated costs are based on fixed and variable costs of typical grain elevators as indicated by

Table 10--Annual operating costs for three hypothetical river subterminal grain elevator models of specified capacities, 1980 1/

Item	Model I 500,000 bushel capacity	Model II 1,000,000 bushel capacity	Model III 2,000,000 bushel capacity
		1,000 dollars	
Fixed costs:			
Depreciation	50	125	250
Taxes	12	22	44
Interest on long-term Indebtedness 2/	180	270	420
Total fixed costs	242	417	714
Variable costs:			
Salaries and wages	56	165	220
Insurance	10	20	32
Interest on working capital	16	60	80
Professional fees	4	9	12
Repairs and supplies	15	52	87
Utilities	9	40	86
Other	16	50	90
Total variable costs	126	396	607
Total costs	368	813	1,321
Total volume handled (1,000 bu.)	2,250	7,000	14,000
Average cost per bushel	16.4	11.6	9.4

1/ Estimated costs in this table were calculated using cost data in table 8 of (16) and tables 9 and 11 of (15). Elevator model I, including port facilities and site improvements, is estimated to cost $3 million; model II, $4.5 million; and model III, $7 million.

2/ Estimate based on an interest rate of 9 percent on long-term debt equivalent to two-thirds of fixed assets. Interest shown is for first year, and would decline as debt is reduced.

Table 11--Annual operating costs for model II, a hypothetical million-bushel river subterminal grain elevator, at various volume levels, 1980 1/

Item	Annual volume of grain handled (Mil. bu.)			
	3.0	5.0	7.0	9.0
	1,000 dollars			
Fixed costs:				
Depreciation	125	125	125	125
Taxes	22	22	22	22
Interest on long-term indebtedness 2/	270	270	270	270
Total fixed costs	417	417	417	417
Variable costs:				
Salaries and wages	128	149	165	176
Insurance	13	17	20	22
Interest on working capital	46	53	60	67
Professional fees	7	8	9	10
Repairs and supplies	32	42	52	62
Utilities	21	32	40	47
Other	33	40	50	53
Total variable costs	280	341	396	437
Total costs	697	758	813	854
Average cost per bushel	23.2	15.2	11.6	9.5

1/ Estimated costs in this table were calculated using cost data in table 9 of (16).

2/ Estimate based on an interest rate of 9 percent on long-term debt equivalent to two-thirds of fixed assets. Interest shown is for first year, and would decline as debt is reduced.

Table 12—Costs and returns for first year of operation of model II, a hypothetical million-bushel river subterminal grain elevator handling 9 million bushels of grain, 1980 1/

Item	Cost	Returns
	Dollars	
Gross revenue 2/		1,080,000
Operating expenses:		
Fixed costs 3/	417,000	
Variable costs 4/	437,000	
Total	854,000	
Net income		226,000
Investment	4,500,000	
	Percent	
Return on investment 5/		5.0

1/ The estimated annual handling volume of 9,000,000 bushels for the first year of operation is the most conservative estimate used in the cost/return analysis. It is based on reducing estimate No. 3 for 1980 (table 9) by 20 percent to account for difficulties the termin may encounter in attracting business during the first year of operation.

2/ Assumes a 12 cent per bushel margin generated from sale of grain and grain elevator service charges. Includes storage, handling and marketing service charges. Excludes barge costs to Gulf.

3/ From table 11.

4/ From table 11.

5/ No value allocated to owner's labor, nor possible alternative return on his capital.

Table 13--Costs and returns for first year of operation of model II, a a hypothetical million bushel river subterminal grain elevator handling 11,259,000 bushels of grain, 1980 1/

Item	Cost	Returns
	Dollars	
Gross revenue 2/		1,351,080
Operating expenses:		
Fixed costs 3/	417,000	
Variable costs 4/	480,000	
Total	897,000	
Net income		454,080
Investment	4,500,000	
	Percent	
Return on investment 5/		10.1

1/ Analysis based on estimate No. 3 for 1980 (table 9).
2/ Assumes a 12 cent per bushel margin generated from sale of grain and grain elevator service charges. Includes storage, handling and marketing service charges. Excludes barge costs to Gulf.
3/ From table 11.
4/ Derived from variable cost data in table 11.
5/ No value allocated to owner's labor, nor possible alternative return on his capital.

Table 14—Costs and returns for first year of operation of model II, a hypothetical million-bushel river subterminal grain elevator handling 13,965,000 bushels of grain, 1980 1/

Item	Cost	Returns
	Dollars	
Gross revenue 2/		1,675,800
Operating expenses:		
Fixed costs 3/	417,000	
Variable costs 4/	524,000	
Total	941,000	
Net income		734,800
Investment		
	Percent	
Return on investment 5/		16.3

1/ Analysis based on estimate No. 2 for 1980 (table 9).
2/ Assumes a 12 cent per bushel margin generated from sale of grain and grain elevator service charges. Includes storage, handling and marketing service charges. Excludes barge costs to Gulf.
3/ From table 11.
4/ Derived from variable cost data in table 11.
5/ No value allocated to owner's labor, nor possible alternative return on his capital.

Table 15—Long-term cost/revenue analysis including ratio of annual cash flow to annual debt costs and estimated present value of future net revenue

Item	Cost	Returns	Financial ratios
		Dollars	
(1) Total investment	4,500,000		
(2) Average annual cost of debt amortized over 15 years at 9 percent 1/	372,180		
(3) Estimated average annual gross revenue 2/		1,645,260	
(4) Estimated average annual net revenue 3/		704,260	
(5) Gross revenue less all operating costs, except depreciation and interest (cash flow) 4/		1,099,260	
(6) Ratio of annual cash flow to annual debt costs 5/			2.95
(7) Present value of future stream of net revenue over 15-year debt repayment period at 9 percent interest rate		5,676,758	
(8) Ratio of present value of future net revenue to total investment cost 6/			1.26

1/ Assumes equity capital ($1,500,000) equivalent to one-third of total cost of grain port complex ($4,500,000), or indebtedness of $3,000,000.

2/ Based on elevator handling an annual estimated volume of grain of 13,710,500 bushels with an average handling margin of 12 cents per bushel. Average annual volume of grain based on estimate No. 3, table 9.

3/ 13,710,500 bushels x 12 cents per bushel port elevator handling margin less total annual operating expenses, assume to average $941,000 per year over 15-year period, equal average net revenue of $704,260 per year.

4/ Costs estimated from data in table 11. Variable costs were estimated to be $524,000 annually at a handling volume of 13,710,500 bushels and fixed costs were unchanged at $417,000.

5/ $1,099,260 ÷ $372,180.

6/ $5,676,758 ÷ $4,500,000.

Thurston (16), Schienbein and Vosloh (15) and "rule of thumb" construction cost estimates acquired via informal discussions with people in the grain elevator business and other studies on construction of grain terminal and port facilities. Cost data for the three models include an assumed cost for land, site preparation, a wharf, moorings, and on-site roads based on estimates from studies of port development on the Arkansas River. 6/

The estimated operating costs are based on functions the proposed river subterminal at Savanna is expected or assumed to perform and related facility and equipment requirements. It is assumed that the elevator will specialize in a fast throughput for loading barges with grain to be shipped to Gulf ports in the vicinity of Baton Rouge-New Orleans, Louisiana with possibly some intermediate destinations. It will, in addition to its main receiving and loadout function, provide drying and storage services. It is anticipated that the river elevator will receive most of its grain from country elevators, but some grain will come direct from farms and this grain may require drying and storage. Grain will be received predominantly from large trailer trucks in loads of 500 bushels or more. Storage facilities will be adequate to provide limited storage to local farmers and country elevators, and also allow grain collections sufficient to loadout one tow consisting of either twelve 175-foot hopper barges or six 195-foot hopper barges, requiring 12,000

6/ Tippetts-Abbett-McCarthy-Stratton, Engineers and Architects, Development of Marine Terminal Facilities, Pulaski County, Arkansas (Prepared for Little Rock Port Authority), New York, N.Y., October 1962; and Bovay Engineers, Inc., Grain Transfer Facility Study (Prepared for Ozarks Regional Commission and Little Rock Port Authority), Houston, Texas.

tons or 9,000 tons of grain respectively. 7/

A tow of twelve 175-foot barges would require about 429,000 bushels of corn to load it to capacity, and a fully-loaded tow of six 195-foot barges would require 321,000 bushels of corn. Elevator model I in table 10, the smallest of the three models, has a storage capacity of 500,000 bushels, enough to load about nine 195-foot hopper barges. Model II and model III could store enough grain to load 19 and 37 of the 195-foot barges, respectively. Storage capability may be important in acquiring barge service and in planning an efficient system of grain handling relative to loading barges and assembling barge tows. However, it is unlikely that the Savanna facility would ever loadout a complete tow at once. Barges are often hard to get and arrival is unpredictable. A tow is usually made up from several shippers. Nevertheless, storage could be critical for other reasons.

Storage could be important in attracting the business of local country elevators and farmers, especially during the harvest season, late fall and early spring, when both storage facilities and barges may be in short supply. The Upper Mississippi is closed by ice about 4 months of the year, from late December into April. Therefore, storage would be needed for all grain re-

7/ Hopper barges come in three standard lengths: 175, 195, and 290 feet with cargo holds of 1,000-, 1,500-, and 3,000-ton capacities. Some are open and some have waterproof covers. The two standard sizes of covered cargo barges are the 175-and 195-foot versions with the same dimensions and capacities as the 175-foot and 195-foot open-hopper barges. On the Upper Mississippi and Illinois Rivers, most locks are 110 feet wide and 600 feet long which allow single-time locking of tows of twelve 175-foot or six 195-foot barges. Larger tows are disassembled before and rejoined after locking, but this is expensive. Normally, more than 15 barges per tow is not considered good practice where a number of locks are involved. The average number of barges per tow has been estimated at between 20 and 30 on the Lower Mississippi and between 10 and 15 on the Upper Mississippi. The most popular covered barge for hauling grain is the 195-foot, 1,500-ton capacity size. It can haul as much grain as 25 conventional boxcars or 15 jumbo-hopper railcars. The 290-foot barge is used mostly south of St. Louis on the Mississippi where the river is open--free of locks and dams (6, 14).

received but not shipped out before the winter freeze, or received during the freeze.

Since storage may be a critical factor in the river elevators' success for the reasons just cited, the three models in table 10 include facilities for providing storage ranging from 500,000 bushels to 2 million bushels of grain. Also, since a prime objective of the elevator is to provide a fast throughput for barge loading, receiving and loading capacities are assumed to average between 20,000 and 30,000 bushels per hour. Drying capacity is expected to average between 3,000 and 5,000 bushels per hour. 8/ Including cost of land, port structures, site preparation, and roads, construction and equipment costs of model I are estimated at $3 million; model II $4.5 million; and model III, $7 million.

Table 10 shows total annual operating costs and average annual costs per bushel for each of the three model elevators when the annual volume of grain handled is as indicated. Volumes handled are based on annual turnover rates of 4.5 for model I, and 7.0 for models II and III. 9/ Costs per bushel can vary sharply as the volume of grain handled changes. Average operating costs per bushel for elevator model II drop from 23.2 cents to 9.5 cents as annual volume increases from 3 million to 9 million bushels (table 11).

8/ Removing 5 percentage points of moisture.

9/ These annual turnover rates (ratio of grain volume handled during a year to storage capacity) were assumed reasonable for a river subterminal elevator. The turnover rate varies among types of elevators. It averaged 9.6 for U.S. port elevators in 1974 (17), and 2.52 for local farm cooperative elevators in Illinois in 1971-72 (12). Turnover rates ranged from about 3.0 to 9.0 for U.S. inland and port grain terminals, respectively, in 1971-72 (15). A turnover of about 7.0 is typical for a river elevator with a fast throughput for barge loading and facilities for storing about 1 million bushels of grain (16). Of course, the turnover rate is influenced by volume of grain business, amount of direct loading from incoming carrier to barge, extent of storage facilities, and type of storage. A river grain facility could specialize in barge loading services only and provide limited or no storage, thereby reducing investment costs. This alternative could be explored as a possible starting point for the proposed facility at Savanna.

A cost-return analysis was prepared for model II (tables 12, 13, 14, and 15), assuming that the proposed river subterminal at Savanna would approximate the grain-handling facilities and capability of this model. Three levels of grain business were assumed in making the analysis, reflecting varying degrees of conservatism regarding expected grain trade (table 9). Estimated returns on investment are 5, 10, and 16 percent, depending upon volume of grain handled (tables 12, 13, and 14). These rates of return are computed on the total cost of facilities, estimated at $4.5 million; that is, the total amount of investment capital, including both borrowed funds and owners equity.

Table 15 presents the estimated present value ($5,676,758) of the terminal's future net revenue and other financial data over an assumed 15-year debt retirement period. Annual cash flow is estimated at $1,099,260 and the ratio of annual cash flow to annual debt service is 2.95. These estimates are based on the assumption that the proposed river terminal will handle at least 13,710,500 bushels of grain annually over the 15-year period, with an annual average revenue of 12 cents per bushel. This estimated volume appears to be a conservative and reasonable expectation based on estimates in table 9. The revenue estimates in table 12 are based on the assumption that a river elevator at Savanna will exercise the storage option and provide some grain storage for country elevators and farmers in the study area. If grain storage is not a revenue generating function of the Savanna terminal then results of the cost/return analysis would be considerably different, because cost of storage facilities storage revenue are important factors in the annual cost and return estimates used in the analysis.

The annual volume of grain assumed in this analysis appeared feasible in light of the estimated exportable surplus grain in the project area (tables 4, 5, and 6) and the indicated flow of grain from country dealers to a Savanna

river elevator based on the transportation cost analysis (tables 8 and 9). Carroll County (where the grain terminal is to be located) alone had an exportable surplus of corn estimated at about 6.2 million bushels in 1975, and this surplus is projected to average about 7.4 million bushels per year over the next 15 years (table 4). Exportable surpluses of soybeans and oats in Carroll County are expected to average a little over one-half million bushels each (tables 5 and 6). In addition to Carroll County, the Savanna facility should draw additional grain from neighboring counties which are projected to have increasing amounts of surplus grain and soybeans over the next 15 years (tables 4, 5, 6, 8, and 9).

The most conservative approach to the cost-return analysis was taken in table 12 where the annual volume of grain trade was estimated at 9 million bushels. This amounted to a 20 percent reduction in estimate No. 3 for 1980 (table 9) to account for the likelihood that during the first year of operation business may be difficult to generate in spite of savings in trucking costs and other incentives. Most of this grain could be expected to come from nearby locations in Carroll, Jo Daviess, and Western Stephenson and Ogle counties.

The annual returns in tables 12, 13, 14, and 15 assume an elevator bid price for grain adequate to cover barge transportation costs to Gulf ports and storage and handling costs of the grain elevator. The elevator will need to charge a port margin that will allow for all costs to be covered, including grain transportation costs from the facility to the Gulf (Baton Rouge-New Orleans). In the cost/return analysis, it was assumed that the model II elevator could acquire the indicated volume of grain via a terminal bid price that would cover barge transportation costs to the Gulf and provide an annual average operating margin of 12 cents per bushel. According

to estimated barge costs to the Gulf and recent spreads in Gulf bid prices and F.O.B. barge terminal prices on the upper Mississippi River 10/ the 12 cents per bushel river elevator handling margin appeared to be a reasonable, assumption.

Elevator operating costs and barge transportation costs estimated for the cost/return analysis appear to be reasonable, based on findings in other studies. However, an appraisal of the grain elevator cost structure and barge transportation charges in the area around Savanna, Illinois may prove these estimates to be either too low or too high.

A study of 14 midwestern grain cooperatives indicated an average cost of $3.88 per ton for shipping grain to the Gulf in 1970. These barge shipments were centered in Illinois, Minnesota, Iowa, and Missouri (14). Adjusting the cost of $3.88 per ton for price movements between 1970 and 1977, indicates a current adjusted average cost of $6.83 per ton, or 19 cents per bushel, assuming the grain was all corn. Another study showed barge costs for a more specific location--Dubuque, Iowa. This study estimated 1974 costs of shipping corn by barge from Dubuque to the Gulf to be $7.15 per ton (6). Adjusted for price movements, this would indicate a 1977 cost of $8.67 per ton, or 24 cents per bushel for barging corn from Dubuque to the Gulf. Using this last study as a basis for approximating barge costs, it is estimated that average costs of shipping corn and soybeans by barge from Savanna, Illinois to Gulf ports will be about $8.67 per ton, or 24.3 cents and 26.0 cents per bushel for corn and soybeans respectively. 11/

10/ C&MS, USDA, Summary of Daily Prices, Spot, F.O.B., Mississippi River Barge Terminal Elevators and Delivered Port, Gulf, 1978 and 1979.

11/ Current estimated costs are based on a 1974 cost of $7.15 per ton for shipping corn by barge from Dubuque, Iowa to the Gulf (6) and expanding this cost estimate, using wholesale price movement between 1974 and 1977, to account for rising prices since 1974 ($7.15 x 1.213 = $8.67).

Barge rates for hauling exempt bulk commodities such as grain vary with demand for transportation services. Generally, barge rates are negotiated between shipper and carrier. Discounts below or premiums above a published rate depend upon how many barges are available and the need for them. Although actual barge operating costs vary depending upon origin and destination points, commodity hauled, and whether movement is upstream or downstream, effective barge rates in the short-run are more tied to the demand-supply situation than to hauling costs. Seasonality of grain harvests produce peak and off-peak periods of demand for barge service. Weather, volume of production, local storage and drying capacities, and export demand for grain modify the seasonal demand for transportation equipment. Normally, higher rates are charged during peak periods and decline into the off-seasons (6, 14).

Average current elevator receiving (by truck) and loadout (by water) costs per bushel for corn and soybeans are estimated at 5.5 cents and 5.3 cents (excluding storage costs), respectively, based on data in one grain transportation study. 12/ Based on another study, current average grain handling costs (all grains combined, excluding storage costs), when received by truck and loaded out by water, are estimated at 4.86 cents and 6.12 cents per bushel for inland terminals and port terminals, respectively. Using results in the same study, current costs of storage for one year would average about 23.4 cents and 36.3 cents per bushel for inland and port

12/ Estimates are based on U.S. average 1971-72 costs per bushel of 2.022 cents per ton for corn and soybeans, respectively, (5), with adjustments for price increases between 1971 and 1977 using the Bureau of Labor Statistics' (BLS) Wholesale Price Index series.

terminals, respectively. 13/ Using the above range of costs as guidelines, and combining receiving and loadout costs with storage costs for two months (assuming grain shipped by barge is held, on the average, for about two months by the river subterminal) elevator operating costs per bushel of grain handled would average between 8.9 and 12.2 cents. These cost estimates are reasonably close to those in tables 10 and 11.

Of course, operating costs can vary considerably depending upon the size of investment in facilities and the annual volume handled. For the sample of grain elevators on which the basic cost data above were developed, storage capacity and annual volume handled averaged about 7 million bushels and 21 million bushels, respectively, for inland terminals, and 5.2 million bushels and 47 million bushels, respectively, for port terminals (15).

When a clearer picture is obtained of site location and services expected to be provided by the proposed river grain facility at Savanna, annual costs can be better estimated by obtaining bids on installation costs from river port and grain elevator construction contractors and equipment dealers. These should include costs of site preparation such as dredging, piers, and access roads, as well as costs of equipment and buildings. The estimated costs in tables 10 through 15 can then be adjusted to reflect these more solid cost figures.

13/ Estimates are based on U.S. average 1971-72 costs per bushel of 2.022 cents for receiving grain by truck and 0.831 cents for loading out by water for inland terminals, and 2.512 cents for receiving by truck and 1.075 cents for loading out by water for port terminals (15)--all adjusted for price movements between 1971 and 1977 using the Wholesale Price Index of BLS. Estimates of storage costs are based on 1971-72 U.S. average costs of 13.745 cents and 21.348 cents per bushel for inland and port terminals, respectively (15), adjusted to reflect current prices.

AN OVERVIEW OF THE GRAIN EXPORT MARKET AND TRANSPORTATION PROBLEMS FACING UPPER MISSISSIPPI RIVER BARGE TERMINALS

Major U. S. agricultural commodities moving in world trade are corn, wheat, and soybeans. The world market for U. S. corn and soybeans is expected to remain strong with exports estimated to reamin at somewhat above the export levels established in the seventies. High and low level projections of U. S. feedgrain exports in 1985 are estimated at 55 million and 35 million tons (corn normally accounts for about four-fifths of the total feedgrain exports). Estimated 1985 export projections for soybeans range from a high of 28 million tons to a low of 25 million tons. 14/ The 1985 high-level export estimate for feedgrains is 60 percent above the 1975 exports, and the 1985 high-level export estimate for soybeans is about two and one-half times the 1975 quantity exported (17, 21).

Shipments of corn, wheat, and soybeans through Gulf ports accounted for more than two-thirds of the corn, over one-half of the wheat, and about four-fifths of the soybean exports in 1974. The Mississippi and Illinois Rivers are the principal inland waterways for barging grains. In 1974, nearly two-thirds of the grain shipments originating on the Upper Mississippi (north of St. Louis) was transported to the Baton Rouge-New Orleans, Louisiana area. The Louisiana Gulf ports take in almost all the barge-shipped soybeans and corn, and most of it comes from the Mid-West (north of St. Louis) barge terminals on the Mississippi and Illinois Rivers. For example, in 1974, about 14.6 million tons of corn and 4.4 million tons of soybeans were shipped to Louisiana Gulf ports, down the Mississippi from areas north of St. Louis. This accounted for about 88 percent of the corn and 53 percent of the soybeans moved by barge that year to various domestic and export ports in the United States (6, 20).

14/ These tonnage figures are in metric tons. To convert to U. S. short tons, multiply metric tons by 1.1023. A metric ton is equal to 2,204.622 pounds the short ton, 2,000 pounds.

Surplus corn and soybean production in the 11-county grain service market area of the proposed Savanna grain subterminal is projected to increase over the next 17 years, creating a need for more grain transportation service. Corn and soybeans shipped to river grain terminals on the Illinois and Mississippi Rivers normally goes to Louisiana Gulf ports for export. Therefore, considering the favorable prospects for future exports, it would appear that the 11-county area around Savanna should continue to enjoy a share of the grain export market, given adequate marketing and transportation facilities.

A new river terminal located at Savanna, according to an analysis of the results of the transportation study (tables 7, 8, and 9), could capture a share of the export trade in the range of 11.3 to 22.2 million bushels annually by 1980, assuming that savings in highway transport costs alone could attract grain movement to the new facility.

However, if the export market should decline, it could have a very depressing effect on the grain terminal business and revenues. Unexpected interruption of the cash flow of a new terminal along the Mississippi River could be critical. Also, damage and/or deterioration in lock and dam facilities could hamper trade of grain terminals along the Mississippi. Locks and Dam 26, at Alton, Illinois, is a case in point. It is estimated by the Corps of Engineers that the locks will reach maximum capacity of 73 million tons a year by 1982. The current annual rate of traffic is about 50 million tons (20).

Another item of consideration for a barge terminal is the effect of waterway user charges on its business. One study of the possible effects of waterway user charges on grain and fertilizer shipments indicated that charges of 0.05 cents or less per ton mile would have no effect on barge shipments of grain. At 0.10 cents per ton mile barge shipments of grain decreased by 29 percent, and at 0.25 cents per ton mile, no grain was shipped by barge (4). Although this study was done for only one county in central Illinois, near barge loading points on the Illinois River, it could have valuable implications for other barge shipping areas, depending upon local alternative transportation services (rail or truck).

CONCLUSIONS

The conclusions drawn from this study are:

1. There is a sufficient volume of grain production and exportable surplus presently available in the 11-county survey area to support an efficient sized river grain terminal marketing facility at Savanna, Illinois. In the 1975-76 marketing year, there were 24.6 million bushels available for export from 45 shippers. Transportation analysis relative to grain flows and costs of highway transport indicated that 20 million bushels of this exportable surplus would have moved to a Savanna terminal in 1975, and 22 million by 1980. These estimates are based on analysis of highway transport costs alone and include some grain movement to Savanna based on marginal savings in highway shipping costs.

   In analyzing the location of survey respondents, it is believed that the 20 million bushels of grain indicated going to Savanna in 1975 is on the high side. A somewhat conservative and more reasonable estimate of what a Savanna terminal might have expected, based on highway transport savings of moving grain from farms and country elevators to terminals, would have been about 11 to 14 million bushels of grain in the 1975-76 marketing year.

2. The volume of production of corn and soybeans is trending upward and this trend should continue but at a slower rate in the future (projected to 1995), unless there is an unexpected increase in average yields. Oat production is trending downward and this trend should continue but at a slow rate when projected to 1995.

3. The volume of exportable surplus of soybeans and corn is trending upward but should slow down in the future, projected to 1995. Exportable surplus of oats is projected to decline in the future.

4. Corn is the major grain for export in the proposed grain terminal service area. Of the total exportable surplus grain, corn accounts for 84 percent. The estimated exportable surplus of corn is projected to increase from 58.3 million to 86.7 million bushels between 1975 and 1995, which is an average increase of 1.4 million bushels per year during the 20-year period.

5. The predominant mode of grain transport to river terminals was by trucks hauling 500 bushels or more. The cost of transporting corn and oats was .096 cents per bushel per mile, and soybeans .086 cents per bushel per mile in 1975-76.

6. The estimated benefits to shippers and farmers resulting from savings in cost of highway transportation by the 45 survey respondents in the 1975-76 marketing year, had they shipped their corn, soybeans, and oats to Savanna rather than the terminals to which they did ship, is $594,000. This estimate is a little high because it includes diverting some grain to Savanna from non-river destinations, which is unlikely, and some grain being moved to Savanna based on very marginal transport savings.

7. Study results based on highway transport costs alone, indicate that a grain terminal at Savanna might expect the following volume of grain business over the next 15 years: 11 to 14 million bushels by 1980; 12 to 15 million bushels by 1985; 15 to 18 million bushels by 1990; and 17 to 20 million bushels by 1995.

8. Results of the cost/return analysis indicate an investment yield ranging from 5 to 16 percent based on projected variable grain handling volumes at a river grain terminal at Savanna. Results were based on cost estimates and revenues that could vary considerably

from those arising from a more thorough examination of costs and returns by the local RC&D sponsors. Once the sponsors decide exactly where on the river the terminal is to be located, and acquire solid figures on site preparation and cost of facilities from construction contractors and grain equipment dealers, and determine barge costs to the Gulf, they can revise the cost/return analysis using the estimated expected grain movement to Savanna as an approximation of grain business in planning the size of their operation. The Savanna terminal probably should start out small in terms of total investment, plan for a fast throughput operation, and allow for expansion of operations and services as experience dictates.

The estimates of grain movement to Savanna are based on limiting assumptions and, therefore, should be interpreted cautiously and used only as general planning guidelines. There is no assurance that the grain will move to Savanna based on savings in trucking costs alone, but this does give the local RC&D sponsors of the proposed grain facility a starting point for making investment/development decisions.

BIBLIOGRAPHY

1. Baumel, C. Phillip, and others
   Projected Quantities of Grain and Fertilizer Requiring Transportation Services in Iowa in 1979-80 and 1984-85, By Counties. Card Report 51. Center for Agricultural and Rural Development, Iowa State University, Ames, Iowa. November 1974.

2. Bermingham, Steve C., and Lowell D. Hill
   Changes in Destination and Mode of Transport for Illinois Grain, 1954, 1970, and 1973. AERR-146. Department of Agricultural Economics, Agricultural Experiment Station, University of Illinois at Urbana-Champaign. August 1976.

3. Brooks, B.L., and L.D. Hill
   Production of Feed Grains and Use by Livestock in Illinois, 1957-1973 and Projected to 1980 and 1985. AE-4404, A Statistical Appendix to AERR-143. Department of Agricultural Economics, Agricultural Experiment Station, University of Illinois at Urbana-Champaign. May 1976.

4. Bunker, Arvin R.
   Impact of Waterway User Charges on Grain and Fertilizer Shipments: A Simulated Case Study. Proceedings of the National Symposium on Transportation for Agriculture and Rural America, Nov. 14-17, 1976, New Orleans, Louisiana. Report No. DOT-TST-77-33. U.S. Department of Transportation. August 1977.

5. Fedeler, Jerry A., Earl O. Heady, and Won W. Koo
   An Interregional Analysis of U.S. Domestic Grain Transportation. Card Record 54T, Center for Agricultural and Rural Development. Iowa State University, Ames, Iowa. Feb. 1975.

6. Gaibler, Floyd D.
   Water Carriers and Inland Waterways in Agricultural Transportation. Agricultural Economic Report No. 379. Economic Research Service, U.S. Department of Agriculture.

7. Hill, Lowell D., and Bruce L. Brooks
   The Market for Illinois Grains. AERR-143. Department of Agricultural Economics, Agricultural Experiment Station, University of Illinois at Urbana-Champaign. August 1976.

8. Illinois Cooperative Crop Reporting Service
   Farm Income and Marketings. Springfield, Illinois. Various years. 1971-75.

9. Illinois Cooperative Crop Reporting Service
   Illinois Agricultural Statitics, Annual Summary. Springfield, Illinois. Various years. 1965-76.

10. Iowa Crop and Livestock Reporting Service
    Iowa Agricultural Statistics. Des Moines, Iowa. Various years. 1965-76.

11. Iowa Crop and Livestock Report Service
Livestock and Poultry County Estimates, 1965-72. Des Moines, Iowa March 1973.

12. Kraenzle, Charles A., and Francis P. Yager
Grain Marketing Patterns of Local Cooperatives. Research Report 31. Farmer Cooperative Service, USDA. October 1975.

13. Moore, C.A.
Grain Transportation Problem in the Blackhawk Hills Area. Unpublished Paper. Economic Research Service, U.S. Department of Agriculture. Peoria, Illinois. December 1973.

14. Reed, Charles E., R.J. Byrne, and R.M. Ackley
Coordinating Transportation to Reduce Costs. Possibilities for 14 Regional Cooperatives. Farmer Cooperative Service, USDA, FCS Service Report 132. June 1973.

15. Schienbein, Allen G., and Carl J. Vosloh, Jr.
Cost of Storing and Handling Grain and Controlling Dust in Commercial Elevators, 1971-72. . . Projections for 1973-74. ERS Report No. 513. USDA, Washington, D.C. March 1973.

16. Thurston, Stanley K.
Improving Cooperative Marketings of Mississippi Delta Soybeans. Service Report No. 157. ESCS, USDA. Washington, D.C. May 1978.

17. Thurston, Stanley K., and others
Improving the Export Capability of Grain Cooperatives. Farmer Cooperative Service. USDA, FCS Research Report 34. June 1976.

18. U.S. Bureau of the Census
Census of Agriculture. Various years, 1949, 1954, 1959, 1964, and 1969. U.S. Government Printing Office, Washington, D.C.

19. U.S. Department of Agriculture
Agricultural Statistics - 1975. U.S. Government Printing Office. Washington, D.C. 1975.

20. U.S. Department of Agriculture, Economic Research Service
Transportation Economics. Selected Reprints from the ERS, USDA. Washington, D.C. January 1976.

21. U.S. Department of Agriculture
Economics, Statistics, and Cooperatives Service. U.S. Foreign Agricultural Trade Statistical Report ESCS-112. Washington, D.C. Selected years, 1975-77.

22. U.S. Water Resources Council
OBERS Projections. Agricultural Production. (Projection of Economic Activity prepared by the Bureau of Economic Analysis, U.S. Department of Commerce and the Economic Research Service, U.S. Department of Agriculture, for the U.S. Water Resources Council.) Washington, D.C. April 1974.

23. Wisconsin Statistical Reporting Service
Wisconsin Agricultural Statistics. Madison, WI. Various years, 1965-77.

APPENDIX A

Tables 1, 2 and 3

Origin and destination of grain, and transportation gains to 45 shippers in an 11-county area in Illinois, Iowa and Wisconsin when corn, soybeans, and oats are shipped to a proposed barge terminal at Savanna, Illinois rather than existing terminals, 1975-76 marketing year.

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
ILLINOIS			
Carroll County			
Albany	266.0	3.2	--
	193.8	45.0	--
	800.0	40.0	--
	1,783.5	88.2	--
Clinton	188.2	24.0	--
	79.0	.8	--
	193.8	51.0	--
	480.0	48.0	--
	376.3	--	--
	1,317.3	123.8	--
Hennepin	3.8	30.0	25.0
	258.4	10.0	--
	224.1	--	--
	320.0	--	--
	7.7	--	--
	814.0	40.0	25.0
			15.0
Cedar Rapids	--	--	2.5
	--	--	39.0
	--	--	56.5
Spring Valley	--	--	22.5
	--	--	22.5
Ottawa	--	--	30.0
	--	--	30.0
Total Carroll County shipments	3,914.8	252.0	134.0

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76 --Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
ILLINOIS			
Jo Daviess County			
Albany			--
	19.5	13.5	--
	240.0	10.0	--
	375.0	--	--
	634.5	23.5	--
Clinton	78.0	18.3	--
	840.0	10.0	--
	450.0	--	--
	1,368.0	28.3	--
Dubuque	120.0	2.2	--
	120.0	2.2	--
Hennepin	300.0	--	--
	300.0	--	--
Spring Valley	375.0	4.5	--
	--	10.0	--
	375.0	14.5	--
Cedar Rapids	--	4.5	.2
	--	4.5	.2
La Salle	--	4.5	--
	--	4.5	--
Mendota	--	--	20.0
	--	--	20.0
Davenport	--	--	9.8
	--	--	9.8
Total Jo Daviess County shipments	2,797.5	77.5	30.0

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76--Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
ILLINOIS			
Stephenson County			
Albany	900.0	27.0	
	900.0	27.0	
Hennepin	380.0	3.0	
	416.0	112.5	
	796.0	115.5	
Clinton	700.0		
	10.0		
	710.0		
Spring Valley	93.0	12.5	20.0
	93.0	12.5	20.0
Chicago	20.0		
	10.4		
	30.4		
Total Stephenson County shipments	2,529.4	155.0	20.0

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
ILLINOIS			
Winnebago County			
Hennepin	323.0		10.6
	185.0	12.0	
	242.6	62.8	
	125.0	50.0	
	875.6	124.8	10.6
Spring Valley	170.0		3.7
	277.2	31.4	
	125.0	50.0	
	572.2	81.4	3.7
Chicago	57.0	48.0	
	7.5	6.3	20.0
	173.2		
	250.0		
	487.7	54.3	20.0
Albany	7.5		
	7.5		
Total Winnebago County shipments	1,943.0	260.5	34.3

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
ILLINOIS			
Ogle County			
Cedar Rapids			23.7
			23.7
Davenport			45.0
			10.0
			55.0
Mendota			10.7
			10.7
Albany	30.3	36.0	19.2
		12.5	
	190.0		
	62.5		
	282.8	48.5	19.2
Clinton	172.0	12.5	
	108.0		
	19.2		
	62.5		
	361.7	12.5	
Hennepin	500.0	100.0	
	62.5	1.6	
	245.0	10.0	
	4.0	12.5	
	64.0	90.0	
	120.0		
	380.0		
	342.0		
	630.0		
	47.3		
	2,394.8	214.1	
Spring Valley	500.0	60.0	12.0
	62.5	10.0	

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76--Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
		Thousand Bushels	
ILLINOIS			
Ogle County			
Spring Valley	245.0	58.0	
	44.2	91.0	
	490.0	29.1	
	224.0	40.0	
	200.0	12.5	
	38.0	80.0	
	342.0		
	70.0		
	47.3		
	2,263.0	380.6	12.0
Ottawa	3.2	20.0	14.2
	70.0	77.8	
	128.6	13.0	
	201.8	110.8	14.2
LaSalle	15.2	43.7	
	120.0	26.0	
	9.6		
	140.0		
	205.0		
	489.8	69.7	
Keokuk, Iowa	72.0		
Chicago	540.0	9.7	4.8
	20.0	14.5	45.0
	10.5	150.8	
	570.5	175.0	49.8
Galesburg		4.0	
		4.0	
Total Ogle County shipments	6,636.4	1,015.2	184.6

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76--Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
		Thousand Bushels	
IOWA			
Clinton County			
Clinton	436.5	270.0	22.5
	432.0	60.0	1.2
	280.0	7.3	
	350.0	42.5	
	285.0	40.0	
	11.0		
	42.5		
	1,837.0	419.8	23.7
Albany	144.0	36.1	
	42.5	45.0	
	48.5		
	235.0	81.1	
		40.0	
Davenport	144.0	90.0	13.5
	120.0	47.5	
	26.0	72.2	
	290.0	249.7	13.5
Cedar Rapids		185.0	9.0
			5.0
			.1
			10.0
			15.3
		185.0	39.4
Galesburg		45.0	
Total Clinton County shipments	2,362.0	980.6	76.6

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76 --Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
		Thousand Bushels	
IOWA			
Jackson County			
Clinton	81.0	2.0	
Albany	9.0	16.0	
Cedar Rapids	6.0		37.0
			5.0
			42.0
Davenport	24.0		
Total Jackson County shipments	120.0	18.0	42.0

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76--Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
	Thousand Bushels		
IOWA			
Dubuque County			
Davenport	85.5		
Dubuque	60.0		
Cedar Rapids			12.0
			10.0
			22.0
Total Dubuque County shipments	145.5		22.0

Continued

Appendix A table 1--Flow of corn, soybeans, and oats to grain terminals from 45 country shippers in 11 counties in Illinois, Iowa, and Wisconsin, 1975-76--Continued

State, county, and terminal	Grain		
	Corn	Soybeans	Oats
		Thousand Bushels	
WISCONSIN			
Green County			
LaSalle	146.3		
Ottawa	439.7		
Clinton		9.0	2.5
Hennepin			2.5
Davenport		1.0	2.5
Total Green County shipments	586.0	10.0	7.5

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Carroll County							
Mt. Carroll	C	188.2	30	9	21	2.02	3,801.64
	H	3.8	75	9	66	6.34	240.92
Chadwick	A	266.0	25	17	8	.77	2,048.20
	C	79.0	28	17	11	1.06	837.40
Chadwick	--	--	--	--	--	--	--
	--	--	--	--	--	--	--
Shannon	H	258.4	92	25	67	6.43	16,615.12
	C	193.8	47	25	22	2.11	4,089.18
	A	193.8	54	25	29	2.78	5,387.64
Millegeville	H	224.1	66	28	38	3.65	8,779.65
	A	523.7	36	28	8	.77	4,032.49
Lanark	H	320.0	75	18	57	5.47	17,504.00
	C	480.0	35	18	17	1.63	7,824.00
	A	800.0	42	18	24	2.30	18,400.00
Mt. Carroll	H	7.7	75	9	66	6.34	488.18
	C	376.3	30	9	21	2.02	7,601.26
Total		3,914.8					97,649.68
Jo Daviess County							
Stockton	C	78.0	51	30	21	2.02	1,575.60
	A	19.5	58	30	28	2.69	524.55
Warren	C	840.0	62	41	21	2.02	16,968.00
	A	240.0	70	41	29	2.78	6,672.00
	DU	120.0	48	41	7	.67	804.00
Warren	H	300.0	120	41	79	7.58	22,740.00
	C	450.0	62	41	21	2.02	9,090.00
	A	375.0	69	41	28	2.69	10,087.50
	SV	375.0	122	41	81	7.78	29,175.00
Total		2,797.5					97,636.65

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Ogle County							
Haldane	H	47.3	69	33	36	3.46	1,636.48
	SV	47.3	71	33	38	3.65	1,726.25
	CH	10.5	145	33	112	10.75	1,128.75
Polo	H	630.0	62	41	21	2.02	12,726.00
	SV	70.0	64	41	23	2.21	1,547.00
Polo	H	342.0	62	41	21	2.02	6,908.04
	A	30.3	48	41	7	.67	203.01
	SV	342.0	64	41	23	2.21	7,558.02
	LS	15.2	63	41	22	2.11	320.72
Forreston	H	380.0	80	37	43	4.13	15,694.00
	C	172.0	50	37	13	1.25	2,150.00
	A	190.0	57	37	20	1.92	3,648.00
	SV	38.0	82	37	45	4.32	1,641.60
Mt. Morris	H	120.0	66	42	24	2.30	2,760.00
	SV	200.0	68	42	26	2.50	5,000.00
	CH	20.0	111	42	69	6.62	1,324.00
	LS	120.0	62	42	20	1.92	2,304.00
Chana	K	72.0	120	55	65	6.24	4,492.80
	C	108.0	69	55	14	1.34	1,447.20
	CH	540.0	127	55	82	7.87	42,498.00
Stillman Valley	H	64.0	74	56	18	.73	1,107.20
	C	19.2	75	56	19	1.83	351.36
	SV	224.0	72	56	16	1.54	3,449.60
	LS	9.6	68	56	12	1.15	710.40
	O	3.2	78	56	22	2.11	67.52
Rochelle	SV	490.0	53	55	-2	.0	.0
	LS	140.0	43	55	-12	.0	.0
	O	70.0	56	55	1	.096	67.20

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Ogle County							
Lindenwood	H	4.0	71	69	2	.19	7.60
	SV	44.2	69	69	0	.00	.00
	LS	205.0	67	69	-2	.00	.00
	O	128.6	73	69	4	.39	501.54
Forreston	H	245.0	82	44	38	3.65	8,942.50
	SV	245.0	80	44	36	3.46	8,477.00
Baileyville	H	62.5	85	49	36	3.47	2,168.75
	C	62.5	56	49	7	.67	418.75
	A	62.5	62	49	13	1.25	781.25
	SV	62.5	83	49	34	3.26	2,037.50
Baileyville	H	500.0	85	49	36	3.47	17,350.00
	SV	500.0	83	49	34	3.26	16,300.00
Total		5,801.4					179,452.04
Stephenson County							
Pearl City	H	380.0	90	29	61	5.86	22,268.00
	C	700.0	40	29	11	1.06	7,420.00
	A	900.0	49	29	20	1.92	17,280.00
	CH	20.0	116	29	87	8.35	1,670.00
Lena	C	10.0	66	45	21	2.02	202.00
Freeport	H	416.0	88	55	33	3.17	13,187.20
	SV	93.0	86	55	31	2.98	2,771.40
	CH	10.4	104	55	49	4.70	488.80
Total		2,529.4					65,287.40
Winnebago County							
Winnebago	H	323.0	91	79	12	1.15	3,726.08
	CH	57.0	120	79	39	3.74	2,131.80

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Winnebago County							
Pecatonica	H	185.0	103	69	34	3.26	6,031.00
	A	7.5	80	69	11	1.06	79.50
	SV	170.0	101	69	32	3.07	5,219.00
	CH	7.5	131	69	62	5.95	446.25
Rockton		--	--	--	--	--	--
Winnebago	H	242.6	103	84	19	1.82	4,415.32
	SV	277.2	101	89	17	1.63	4,518.36
	CH	173.2	131	84	47	4.51	7,811.32
Seward	H	125.0	93	79	14	1.34	1,675.00
	SV	125.0	65	79	-14	.00	.00
	CH	250.0	122	79	43	4.13	10,325.00
County total		1,818.0					46,378.63
Illinois total net savings if shipped to Savanna							486,404.40

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Soybeans					
		Volume	Distance to		Net savings via Savanna		
			Terminal	Savanna	Miles saved	Cents per bu. 2/	Net transportation savings to shipper
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Carroll County							
Mt. Carroll	C	24.0	30	9	21	1.81	434.40
Chadwick	A	3.2	25	17	8	.69	22.08
	C	.8	28	17	11	.95	7.60
Shannon	H	30.0	92	25	67	5.76	1,728.00
	A	45.0	54	25	29	2.49	1,120.50
Milledgeville	C	51.0	38	28	10	.86	438.60
Lanark	H	10.0	75	18	57	4.90	490.00
	A	40.0	42	18	24	2.06	824.00
Mt. Carroll	C	48.0	30	9	21	1.81	868.80
Total		252.0					5,933.98
Jo Daviess County							
Warren	C	18.3	62	41	21	1.87	331.23
	CR	4.5	91	41	50	4.30	193.50
	A	13.5	70	41	29	2.49	336.15
	SV	4.5	65	41	24	2.06	92.70
	DU	2.2	48	41	7	.60	13.20
	LS	4.5	69	41	28	2.41	108.45
Warren	C	10.0	62	41	21	1.81	181.00
	A	10.0	69	41	28	2.41	241.00
	SV	10.0	122	41	81	6.97	697.00
Total		77.5					2,194.23
Ogle County							
Haldane	SV	60.0	71	33	38	3.30	1,980.00

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Soybeans: Volume	Distance to: Terminal	Distance to: Savanna	Net savings via Savanna: Miles saved	Net savings via Savanna: Cents per bu. 2/	Net transportation savings to shipper
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Ogle County							
Polo	H	90.0	62	41	21	1.81	1,629.00
	SV	10.0	64	41	23	1.98	198.00
Forreston	H	100.0	80	37	43	3.70	3,700.00
Mt. Morris	A	36.0	63	56	7	.60	216.00
	G	4.0	141	56	85	7.31	292.40
Chana	CH	150.8	127	55	82	7.05	10,575.00
Stillman Val.	SV	58.0	72	56	16	1.38	800.40
	CH	14.5	146	63	83	7.14	1,035.30
Rochelle	SV	91.0	53	55	-2	.00	.00
	LS	26.0	43	55	-12	.00	.00
	O	13.0	56	55	1	.08	10.40
Lindenwood	H	1.6	71	69	2	.17	2.72
	SV	29.1	69	69	0	0	0
	LS	43.7	67	69	-2	.00	.00
	CH	9.7	130	69	61	5.25	509.25
	O	77.8	73	69	4	.34	264.52
Forreston	H	10.0	82	44	38	3.27	327.00
	SV	40.0	80	44	36	3.10	1,240.00
Baileyville	H	12.5	85	49	36	3.10	387.50
	C	12.5	56	49	7	.60	75.00
	A	12.5	62	49	13	1.12	140.00
	SV	12.5	83	49	34	2.92	365.00
Baileyville	SV	80.0	83	49	34	2.92	2,336.00
	O	20.0	89	49	40	3.44	688.00
Total		854.5					26,771.49

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Soybeans					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Stephenson County							
Pearl City	H	3.0	90	29	61	5.25	157.50
	A	27.0	49	29	20	1.72	464.40
Freeport	H	112.5	88	55	33	2.83	3,183.75
	SV	12.5	86	55	31	2.67	333.75
Total		155.0					4,139.40
Winnebago County							
Winnebago	H	12.0	91	79	12	1.03	123.60
	CH	48.0	120	79	39	3.35	1,608.00
Pecatonica	H	62.8	103	69	34	2.92	1,833.76
	SV	31.4	101	69	32	2.75	863.50
	CH	6.3	131	69	62	5.33	335.79
Winnebago	H	50.0	103	84	19	1.63	815.00
	SV	50.0	101	84	17	1.46	730.00
Total		260.5					6,309.65
Illinois total net savings if shipped to Savanna							45,348.75

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Oats					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Carroll County							
Mt. Carroll	CR	15.0	100	9	91	8.74	1,317.00
Shannon	H	25.0	66	28	38	3.65	912.50
	CR	2.5	117	28	89	8.54	213.50
	SV	22.5	70	28	42	4.03	906.75
Lanark	CR	39.0	109	18	91	8.74	3,408.60
Mt. Carroll	O	30.0	98	9	89	8.54	2,562.00
Total		134.0					9,320.35
Jo Daviess							
Warren	M	20.0	102	41	61	5.86	1,172.00
	DP	9.8	97	41	56	5.38	527.24
	CR	.2	134	41	93	8.93	17.86
Total		30.0					1,717.10
Ogle County							
Polo	O	14.2	83	41	42	4.03	574.28
Forreston	CR	23.7	124	37	87	8.35	1,978.95
Mt. Morris	A	19.2	63	42	21	2.02	387.84
	CH	4.8	111	42	69	6.62	317.76
Chana	DP	45.0	110	55	55	5.28	2,376.00
	CH	45.0	127	55	72	6.91	3,109.50
Stillman Valley	SV	12.0	72	56	16	1.54	184.80

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
IOWA		Thous. bu.	---------- Miles ----------			Cents	Dollars
Clinton County							
Clinton	C	436.5	3	21	-18	.00	.00
	A	48.5	12	21	-9	.00	.00
Delmar	C	432.0	34	34	0	.00	.00
	A	144.0	43	34	9	.86	1,238.40
	DP	144.0	45	34	11	1.06	1,526.40
Dewitt	C	280.0	19	41	-22	.00	.00
	DP	120.0	30	41	-11	.00	.00
Dewitt	C	350.0	19	41	-22	.00	.00
Dewitt	C	285.0	19	41	-22	.00	.00
Calamus	C	11.0	31	53	-22	.00	.00
	DP	26.0	45	53	-8	.00	.00
Lost Nation	C	42.5	34	51	-17	.00	.00
	A	42.5	43	51	-8	.00	.00
Total		288.0					2,764.80
Jackson County							
Maquoketa	C	81.0	39	32	7	.67	542.70
	A	9.0	48	32	16	1.54	138.60
Maquoketa	CR	6.0	59	32	27	2.59	155.40
	DP	24.0	51	32	19	1.82	618.80
Total		120.0					1,455.50
Dubuque County							
Dubuque	DP	85.5	83	50	33	3.17	271.04

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Oats					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
ILLINOIS		Thous. bu.	---------- Miles ----------			Cents	Dollars
Ogle County							
Lindenwood	M	10.7	47	69	-22	.00	.00
Baileyville	DP	10.0	105	49	56	5.38	5,380.00
Total		173.9					14,309.13
Stephenson County							
Freeport	SV	20.0	86	55	31	2.98	596.00
Winnebago County							
Pecatonica	H	10.6	103	69	34	3.26	332.52
	SV	3.7	101	69	32	3.07	113.59
Winnebago	CH	20.0	131	84	47	4.51	902.00
Total		34.3					1,348.11
Illinois total net savings if shipped to Savanna							27,290.69

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Corn					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
		Thous. bu.	---------- Miles ----------			Cents	Dollars
IOWA							
Dubuque County							
Farley	DU	60.0	21	62	-41	.00	00
Total		85.5					271.04
Iowa total net savings if shipped to Savanna							4,491.34
WISCONSIN							
Green County							
Monroe	LS	146.3	106	77	29	2.78	4,067.14
	O	439.7	117	77	40	3.84	16,884.48
Total		586.0					20,951.62
Wisconsin total net savings if shipped to Savanna							20,951.62

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Soybeans					
		Volume	Distance to		Net savings via Savanna		
			Terminal	Savanna	Miles saved	Cents per bu. 2/	Net transportation savings to shipper
IOWA		Thous. bu.	---------- Miles ----------			Cents	Dollars
Clinton County							
Delmar	C	270.0	34	34	00	.00	.00
	A	45.0	43	34	9	.77	346.50
	DP	90.0	45	34	11	.95	855.00
	G	45.0	85	34	51	4.39	1,975.50
Dewitt	C	40.0	19	41	-22	.00	.00
	DP	40.0	30	41	-11	.00	.00
Dewitt	C	60.0	19	41	-22	.00	.00
Dewitt	CR	185.0	62	41	21	1.81	3,348.50
Calamus	C	7.3	31	53	-23	.00	.00
	DP	47.5	45	53	-8	.00	.00
Lost Nation	C	42.5	34	51	-17	.00	.00
	A	36.1	43	51	-8	.00	.00
	DP	72.2	57	51	6	.52	375.44
Total		437.2					6,900.94
Jackson County							
Maquoketa	C	2.0	39	32	7	.60	12.00
	A	16.0	48	32	16	1.38	220.80
Total		18.0					232.80
Iowa total net savings if shipped to Savanna							7,133.74

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Oats					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
IOWA		Thous. bu.	---------- Miles ----------			Cents	Dollars
Clinton County							
Delmar	C	22.5	34	34	0	.00	.00
	DP	13.5	45	34	11	1.06	14.31
	CR	9.0	66	34	22	2.11	189.90
Dewitt	CR	5.0	62	41	21	2.02	101.00
Dewitt	C	1.2	19	41	-22	.00	.00
	CR	.1	62	41	21	2.02	3.03
Calamus	CR	10.0	56	53	3	.29	29.00
Lost Nation	CR	15.3	58	51	7	.67	102.51
Total		52.9					439.75
Jackson County							
Maquoketa	CR	37.0	59	32	27	2.59	958.30
Maquoketa	CR	5.0	59	32	27	2.59	129.50
Total		42.0					1,087.80
Dubuque County							
Dubuque	CR	12.0	68	50	18	1.73	207.60
Farley	CR	10.0	56	62	-6	.00	.00
Total		12.0					207.60
Iowa total net savings if shipped to Savanna							1,735.15

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Soybeans					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
		Thous. bu.	---------- Miles ----------			Cents	Dollars
WISCONSIN							
Green County							
Monroe	C	9.0	96	77	19	1.63	146.70
	DP	1.0	126	77	49	4.21	252.60
Total		10.0					399.30
Wisconsin total net savings if shipped to Savanna							399.30

See footnotes at end of table.

Continued

Appendix A table 2--Gains to shippers of corn, soybeans, and oats in 11-county study area when shipping grain to a proposed terminal at Savanna rather than existing terminals, 1975-76 marketing year--continued

Location of shipper	Terminal 1/	Oats					
		Volume	Distance to		Net savings via Savanna		Net transportation savings to shipper
			Terminal	Savanna	Miles saved	Cents per bu. 2/	
		Thous. bu.	---------- Miles ----------			Cents	Dollars
WISCONSIN							
Green County							
Monroe	C	2.5	96	77	19	1.82	45.50
	H	2.5	113	77	36	3.46	86.50
	DP	2.5	126	77	49	4.70	117.50
Total		7.5					249.50
Wisconsin total net savings if shipped to Savanna							249.50

1/ Terminal code indicates destination of grain shipped by survey respondent country elevators and trucker-dealers located in cities shown in colum 1. Terminal codes are as follow: A = Albany; C = Clinton; H = Hennepin; SV = Spring Valley; O = Ottawa; CH = Chicago; DU = Dubuque; DP = Davenport; CR = Cedar Rapids; G = Galesburg; K = Keokuk; LS = LaSalle; and M = Mendota.

2/ Indicated savings per bushel is obtained by multiplying the "miles saved" by the survey indicated hauling costs: .096 cents per bushel per mile for corn and oats, and .086 cents per bushel per mile for soybeans. Savings in trucking costs per bushel times volume shipped equals net transportation savings to shippers.

Appendix A table 3--Corn: Volume and percent moved from 39 elevators and 6 trucker dealers in grain port study area to different terminals in Illinois and Iowa, 1976-76

Location of shipper	Terminals shipped to												
	Albany	Clinton	Hennepin	Sp.Valley	Ottawa	Chicago	Dubuque	Davenport	Cedar Rapids	Galesburg	Keokuk	La Salle	Mendota
							Thousand bushels						
Illinois													
Carroll	1,783.5	1,317.3	814.0	0	0	0	0	0	0	0	0	0	0
Jo Daviess	634.5	1,368.0	300.0	375.0	0	0	120.0	0	0	0	0	0	0
Ogle	282.8	361.7	2,394.8	2,263.0	201.8	570.5	0	0	0	0	72.0	489.8	0
Stephenson	900.0	710.0	796.0	93.0	0	30.4	0	0	0	0	0	0	0
Winnebago	7.5	0	875.6	572.2	0	487.7	0	0	0	0	0	0	0
Total	3,608.3	3,757.0	5,180.4	3,303.2	201.8	1,088.6	120.0	0	0	0	72.0	489.8	0
Percent	86.8	59.7	90.7	85.8	25.3	78.4	65.8	0	0	0	100.0	69.0	0
Iowa													
Clinton	235.0	1,837.0	0	0	0	0	0	290.0	0	0	0	0	0
Dubuque	0	0	0	0	0	0	60.0	85.5	0	0	0	0	0
Jackson	9.0	81.0	0	0	0	0	0	24.0	6.0	0	0	0	0
Total	244.0	1,918.0	0	0	0	0	60.0	399.5	6.0	0	0	0	0
Percent	5.9	30.5	0	0	0	0	33.0	54.7	1.6	0	0	0	0
Wisconsin													
Grant	0	0	0	0	0	0	0	0	0	0	0	0	0
Green	0	0	0	0	439.7	0	0	0	0	0	0	146.3	0
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	439.7	0	0	0	0	0	0	146.3	0
Percent	0	0	0	0	55.2	0	0	0	0	0	0	20.6	0
Total Corn	3,852.3	5,675.0	5,180.4	3,303.2	641.5	1,088.6	180.0	399.5	6.0	0	72.0	636.1	0
Percent	92.7	90.1	90.7	85.8	80.5	78.4	98.8	54.7	1.6	0	100.0	89.6	0

Continued

Appendix A table 3--Soybeans: Volume and percent moved from 39 elevators and 6 trucker dealers in grain port study area to different terminals in Illinois and Iowa, 1975-76 continued

Location of shipper	Terminals shipped to												
	Albany	Clinton	Hennepin	Sp.Valley	Ottawa	Chicago	Dubuque	Davenport	Cedar Rapids	Galesburg	Keokuk	La Salle	Mendota
							Thousand bushels						
Illinois													
Carroll	88.2	123.8	40.0	0	0	0	0	0	0	0	0	0	0
Jo Daviess	23.5	28.3	0	14.5	0	0	2.2	0	4.5	0	0	4.5	0
Ogle	48.5	12.5	214.0	380.6	110.8	175.0	0	0	0	4.0	0	69.7	0
Stephenson	27.0	0	115.5	12.5	0	0	0	0	0	0	0	0	0
Winnebago	0	0	124.8	81.4	0	54.3	0	0	0	0	0	0	0
Total	187.2	164.6	494.4	489.0	110.8	229.3	2.2	0	4.5	4.0	0	74.2	0
Percent	4.5	2.7	8.7	12.7	13.9	16.5	1.2	0	1.2	8.2	0	10.4	0
Iowa													
Clinton	81.1	419.8	0	0	0	0	0	249.7	185.0	45.0	0	0	0
Dubuque	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackson	16.0	2.0	0	0	0	0	0	0	0	0	0	0	0
Total	97.1	421.8	0	0	0	0	0	249.7	185.0	45.0	0	0	0
Percent	2.3	6.7	0	0	0	0	0	34.2	48.8	91.8	0	0	0
Wisconsin													
Crant	0	0	0	0	0	0	0	0	0	0	0	0	0
Green	0	9.0	0	0	0	0	0	1.0	0	0	0	0	0
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	9.0	0	0	0	0	0	1.0	0	0	0	0	0
Percent	0	.1	0	0	0	0	0	.1	0	0	0	0	0
Total Soybeans	284.3	595.4	494.4	489.0	110.8	229.3	2.2	250.7	189.5	49.0	0	74.2	0
Percent	6.8	9.5	8.7	12.7	13.9	16.5	1.2	34.3	50.0	100.0	0	10.4	0

Continued

Appendix A table 3--Oats: Volume and percent moved from 39 elevators and 6 trucker dealers in grain port study area to different terminals in Illinois and Iowa, 1975-76--continued

Location of shipper	Terminals shipped to												
	Albany	Clinton	Hennepin	Sp.Valley	Ottawa	Chicago	Dubuque	Davenport	Cedar Rapids	Galesburg	Keokuk	La Salle	Mendota
							Thousand bushels						
Illinois													
Carroll	0	0	25.0	22.5	30.0	0	0	0	56.5	0	0	0	0
Jo Daviess	0	0	0	0	0	0	0	9.8	.2	0	0	0	20.0
Ogle	19.2	0	0	12.0	14.2	49.8	0	55.0	23.7	0	0	0	10.7
Stephenson	0	0	0	20.0	0	0	0	0	0	0	0	0	0
Winnebago	0	0	10.6	3.7	0	20.0	0	0	0	0	0	0	0
Total	19.2	0	35.6	58.2	44.2	69.8	0	64.8	80.4	0	0	0	30.7
Percent	.5	0	.6	1.5	5.5	5.1	0	8.9	21.2	0	0	0	100.0
Iowa													
Clinton	0	23.7	0	0	0	0	0	13.5	39.4	0	0	0	0
Dubuque	0	0	0	0	0	0	0	0	2[illegible].0	0	0	0	0
Jackson	0	0	0	0	0	0	0	0	42.0	0	0	0	0
Total	0	23.7	0	0	0	0	0	13.5	103.4	0	0	0	0
Percent	0	.4	0	0	0	0	0	1.8	27.3	0	0	0	0
Wisconsin													
Grant	0	0	0	0	0	0	0	0	0	0	0	0	0
Green	0	2.5	2.5	0	0	0	0	2.5	0	0	0	0	0
Lafayette	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2.5	2.5	0	0	0	0	2.5	0	0	0	0	0
Percent	0	.01	.04	0	0	0	0	.3	0	0	0	0	0
Total oats	19.2	26.2	38.1	58.2	44.2	69.8	0	80.8	183.8	0	0	0	30.7
Percent	.5	.4	.7	1.5	5.5	5.0	0	11.1	48.5	0	0	0	100.0
Total all grains	4,155.8	6,296.6	5,712.9	3,850.5	796.5	1,387.7	182.2	731.0	379.3	49.0	72.0	710.3	30.7

APPENDIX B

OMB Number 40S-77018

Approval Expires 10/31/77

BLACKHAWK HILLS RC&D RIVER PORT GRAIN
FACILITY COMMITTEE

Country Elevator Survey

Name of Firm_____Date_____

Town_____Street_____Phone_____

County_____Township_____State_____

1. Current storage capacity: _____bushels

2. Volume of grain handled (Sept. 1, 1975 to Sept. 1, 1976):

   a. Corn_____bushels

   b. Oats_____bushels

   c. Wheat_____bushels

   d. Soybeans_____bushels

      TOTAL_____bushels

3. What portion of the grains that you handled through your elevator went to local feed mills, back to the farm as whole grain, or as feed milled by you? (Please estimate as closely as possible.)

   a. Corn_____% or _____bushels

   b. Oats_____% or _____bushels

   c. Wheat_____% or _____bushels

   d. Soybeans_____% or _____bushels

Please answer the questions on the following pages for each of the grain crops handled through your elevator during the 1975-76 marketing year. (CORN page 2, OATS page 3, WHEAT page 4, and SOYBEANS page 5)

4. If you marketed CORN to another marketing facility (other than a local feed mill or back to the farm) what percent was transported by: (Fill out as many of the modes as you used to transport corn.)

a. Truck (300 to 500 bu.)_____% d. Rail (2 to 10 cars)_____%

b. Truck (over 500 bu.) _____% e. Rail (over 10 cars)_____%

c. Rail (single car) _____% f. Other (explain)_____%

5. What was the average cost for moving the CORN in the 1975-76 marketing year by: (Report cost in cents per bu. or dollars per ton per mile in appropriate blanks.)

a. Truck (300-500 bu.)_____Cents/bu/mile
_____Dollars/ton/mile

b. Truck (over 500 bu.)_____Cents/bu/mile
_____Dollars/ton/mile

c. Rail (single car) _____Cents/bu/mile
_____Dollars/ton/mile

d. Rail (2 to 10 cars)_____Cents/bu/mile
_____Dollars/ton/mile

e. Rail (over 10 cars)_____Cents/bu/mile
_____Dollars/ton/mile

f. Other (explain)_____Cents/bu/mile
_____ _____Dollars/ton/mile

6. Where did the CORN you moved from your elevator go, other than to local feed mills or back to the farm?

MODE AND DESTINATION	PERCENT	DISTANCE	HAULING COST
a. Via truck to Hennepin on Ill. River.			
b. Via rail to Hennepin on Ill. River.			
c. Via truck to Spring Valley on Ill. River.			
d. Via rail to Spring Valley on Ill. River.			
e. Via truck to Ottawa on Ill. River.			
f. Via rail to Ottawa on Ill. River.			
g. Via truck to La Salle on Ill. River.			
h. Via rail to La Salle on Ill. River.			
i. Via truck to Albany on Miss. River.			
j. Via rail to Albany on Miss. River.			
k. Via truck to Clinton on Miss. River.			
l. Via rail to Clinton on Miss. River.			
m. Via truck to Chicago, Illinois.			
n. Via rail to Chicago, Illinois.			
o. Via truck to Cedar Rapids, Iowa.			
p. Via rail to Cedar Rapids, Iowa.			

q. Other:

Destination	Mode	Percent	Distance	Cost

OATS

7. If you marketed OATS to another marketing facility (other than a local feed mill or back to the farm) what percent was transported by: (Fill out as many of the modes as you used to transport oats.)

a. Truck (300 to 500 bu.)_____% d. Rail (2 to 10 cars)_____%

b. Truck (over 500 bu.) _____% e. Rail (over 10 cars)_____%

c. Rail (single car) _____% f. Other (explain)_____%

8. What was the average cost for moving OATS in the 1975-76 marketing year by: (Report cost in cents per bu. or dollars per ton per mile in appropriate blanks.)

a. Truck (300-500 bu.)_____Cents/bu/mile _____Dollars/ton/mile

b. Truck (over 500 bu.)_____Cents/bu/mile _____Dollars/ton/mile

c. Rail (single car) _____Cents/bu/mile _____Dollars/ton/mile

d. Rail (2 to 10 cars)_____Cents/bu/mile _____Dollars/ton/mile

e. Rail (over 10 cars)_____Cents/bu/mile _____Dollars/ton/mile

f. Other (explain) _____Cents/bu/mile _____Dollars/ton/mile

9. Where did the OATS you moved from your elevator go, other than to local feed mills or back to the farm?

MODE AND DESTINATION	PERCENT	DISTANCE	HAULING COST
a. Via truck to Hennepin on Ill. River.			
b. Via rail to Hennepin on Ill. River.			
c. Via truck to Spring Valley on Ill. River.			
d. Via rail to Spring Valley on Ill. River.			
e. Via truck to Ottawa on Ill. River.			
f. Via rail to Ottawa on Ill. River.			
g. Via truck to La Salle on Ill. River.			
h. Via rail to La Salle on Ill. River.			
i. Via truck to Albany on Miss. River.			
j. Via rail to Albany on Miss. River.			
k. Via truck to Clinton on Miss. River.			
l. Via rail to Clinton on Miss. River.			
m. Via truck to Chicago, Illinois.			
n. Via rail to Chicago, Illinois.			
o. Via truck to Cedar Rapids, Iowa.			
p. Via rail to Cedar Rapids, Iowa.			

q. Other:

Destination	Mode	Percent	Distance	Cost

10. If you marketed WHEAT to another marketing facility (other than a local feed mill or back to the farm) what percent was transported by: (Fill out as many of the modes as you used to transport wheat.)

a. Truck (300 to 500 bu.)_____% d. Rail (2 to 10 cars)_____%

b. Truck (over 500 bu.) _____% e. Rail (over 10 cars)_____%

c. Rail (single car) _____% f. Other (explain)_____%

11. What was the average cost for moving the WHEAT in the 1975-76 marketing year by: (Report cost in cents per bu. or dollars per ton per mile in appropriate blanks.)

a. Truck (300-500 bu.)_____Cents/bu/mile _____Dollars/ton/mile

b. Truck (over 500 bu.)_____Cents/bu/mile _____Dollars/ton/mile

c. Rail (single car) _____Cents/bu/mile _____Dollars/ton/mile

d. Rail (2 to 10 cars)_____Cents/bu/mile _____Dollars/ton/mile

e. Rail (over 10 cars)_____Cents/bu/mile _____Dollars/ton/mile

f. Other (explain) _____Cents/bu/mile _____Dollars/ton/mile

12. Where did the WHEAT you moved from your elevator go, other than to local feed mills or back to the farm?

MODE AND DESTINATION	PERCENT	DISTANCE	HAULING COST
a. Via truck to Hennepin on Ill. River.			
b. Via rail to Hennepin on Ill. River.			
c. Via truck to Spring Valley on Ill. River.			
d. Via rail to Spring Valley on Ill. River.			
e. Via truck to Ottawa on Ill. River.			
f. Via rail to Ottawa on Ill. River.			
g. Via truck to La Salle on Ill. River.			
h. Via rail to La Salle on Ill. River.			
i. Via truck to Albany on Miss. River.			
j. Via rail to Albany on Miss. River.			
k. Via truck to Clinton on Miss. River.			
l. Via rail to Clinton on Miss. River.			
m. Via truck to Chicago, Illinois.			
n. Via rail to Chicago, Illinois.			
o. Via truck to Cedar Rapids, Iowa.			
p. Via rail to Cedar Rapids, Iowa.			

q. Other:

Destination	Mode	Percent	Distance	Cost

SOYBEANS

13. If you marketed SOYBEANS to another marketing facility what percent was transported by: (Fill out as many of the modes as you used to transport soybeans.)

a. Truck (300 to 500 bu.)_____% d. Rail (2 to 10 cars)_____%

b. Truck (over 500 bu.) _____% e. Rail (over 10 cars)_____%

c. Rail (single car) _____% f. Other (explain)_____%

14. What was the average cost for moving the SOYBEANS in the 1975-76 marketing year by: (Report cost in cents per bu. or dollars per ton per mile in appropriate blanks.)

a. Truck (300-500 bu.)_____Cents/bu/mile
_____Dollars/ton/mile

b. Truck (over 500 bu.)_____Cents/bu/mile
_____Dollars/ton/mile

c. Rail (single car) _____Cents/bu/mile
_____Dollars/ton/mile

d. Rail (2 to 10 cars) _____Cents/bu/mile
_____Dollars/ton/mile

e. Rail (over 10 cars)_____Cents/bu/mile
_____Dollars/ton/mile

f. Other (explain) _____Cents/bu/mile
_____ _____Dollars/ton/mile

15. Where did the SOYBEANS you moved from your elevator go?

MODE AND DESTINATION	PERCENT	DISTANCE	HAULING COST
a. Via truck to Hennepin on Ill. River.			
b. Via rail to Hennepin on Ill. River.			
c. Via truck to Spring Valley on Ill. River.			
d. Via rail to Spring Valley on Ill. River.			
e. Via truck to Ottawa on Ill. River.			
f. Via rail to Ottawa on Ill. River.			
g. Via truck to La Salle on Ill. River.			
h. Via rail to La Salle on Ill. River.			
i. Via truck to Albany on Miss. River.			
j. Via rail to Albany on Miss. River.			
k. Via truck to Clinton on Miss. River.			
l. Via rail to Clinton on Miss. River.			
m. Via truck to Chicago, Illinois.			
n. Via rail to Chicago, Illinois.			
o. Via truck to Cedar Rapids, Iowa.			
p. Via rail to Cedar Rapids, Iowa.			

. Other:

Destination	Mode	Percent	Distance	Cost

16. a. Were there any other charges in addition to the above hauling costs that you were charged? YES_____ NO_____

b. If yes, what were the additional charges you paid the hauler? (Give answer in cents per bushel or dollars per ton and circle the kind of grain.)

	Charge per ton or bu.				
1)	loading.....	corn	oats	wheat	soybeans
2)	unloading.....	corn	oats	wheat	soybeans
3)	insurance.....	corn	oats	wheat	soybeans
4)	other (describe)				
	_____ _____	corn	oats	wheat	soybeans

17. What are your charges for the following services? (Fill out only for those services that you perform.)

Service	Rates per unit	CORN	OATS	WHEAT	SOYBEANS
a. In charge	cents/bu.....	____	____	____	_____
b. Out charge	cents/bu.....	____	____	____	_____
c. Cleaning	cents/bu.....	____	____	____	_____
d. Shelling	cents/bu.....	____	____	____	_____
e. Storage	cents/bu/mo.....	____	____	____	_____
f. Drying	cents/point/bu.....	____	____	____	_____
g. Insurance	cents/bu.....	____	____	____	_____
h. Hauling	cents/bu/mile or dollars/ton/mile...	____	____	____	_____
i. Shrinkage	percent or cents per bu.....	____	____	____	_____

Other charges:

Service	Rates per unit	CORN	OATS	WHEAT	SOYBEANS
j. _____	_____	____	____	____	_____
k. _____	_____	____	____	____	_____

18. Would you use a river elevator in Savanna? YES_____ NO_____

Comment: _____

_____

_____

_____